

TO RETRIEVE 2200 Q/S FROM WANG OFFICE, USE EXTERNAL COPY (11) TO  
COPY THE FILE TO A FILE.

THEN USING A DISK FORMATTED ON A 2200, RUN COPY2200 TO COPY FILE  
TO DISK.

IF USING A PC ARCHIVER, MAY NEED TO USE A 1.2 MEG FLOPPY. MAY NOT  
COPY PROPERLY WITH A 360K 5¼". 8" DSDD WILL WORK WITH A LVP.

**TECHNICAL SERVICE BULLETIN**  
**SECTION: Software Technical**

NUMBER: SWT 9386 REPLACES: \_\_\_\_\_ DATE: 04/15/94 PAGE 1 OF 1

MATRIX ID. 4302 PRODUCT/RELEASE# CS/386: Basic-2/386 O/S Rel 1.30

TITLE: New Operating System Release for the CS/386

**PURPOSE:**

To inform the Field that a new CS/386 Operating System, Release 1.30, is now available through Software Distribution and Control, and for customers through Wang Telesales, 1-800-TEL-WANG.

**EXPLANATION:**

Maintenance Release 1.30 for the CS/386 has been officially released and should be available through SDC as of 4/19/94. This release solves a number of unique problems and should be installed at any site that may be encountering operating system related problems. Since the last general release of the O/S, release 1.1, close to 3 dozen bug fixes have been made. Several of these bugs could cause a hang condition. Additionally, SELECT H, which allows platter hogging with the DS, now works properly in a single CPU environment. This can improve disk performance in an environment where the disk is commonly being hogged.

New with this release is the inclusion of 4 utilities with all the latest corrections and enhancements: These include:

- Backup/Restore Utilities - these 2 utilities include the DS disk to tape backup/restore programs as well as the disk backup/restore programs commonly used with the LVP.
- Disk Management Utilities - these are the most current versions of the DS Utilities used to check the DS configuration, reconfigure the DS Winchester drives if using the DS R4 prom, protect/unprotect the DS addresses, manage DS RAM disk, and monitor DS cache usage.
- DOS Utilities - these utilities allow the user to format a 5 1/4" floppy in DOS format, look at the contents of the root directory of a DOS diskette, and display, delete, and rename a root directory file all in a DOS simulated environment. Other features include duplicating a DOS diskette and moving files back and forth between a 2200 disk drive and the root directory of a 5 1/4" DOS diskette.

To order this O/S through Software Distribution and Control, send a Wang Office to SDC Customer Service. Include your name, RDB, complete ship to address, media type, and a discription: Basic-2/386 O/S Rel 1.30. Order: Model #: Basic-2/386-U-9 Part #: 295-7432-9XB

For questions concerning this TSB contact: Mike Bahia 508-656-0256

GROUP: Continuation Engineering MAIL STOP: 019-690

**C O M P A N Y C O N F I D E N T I A L**  
**WANG Laboratories, Inc.**

WANG DCO		CONTROL NO VS00051	
ORIGINATOR: Dan Fallon		EXT: 75738 M/S: 014-690 DEPT: 167	
WRITER: Dan Fallon		EXT: 75738	
PRODUCT DESCRIPTION:		DISPOSITION OF PARTS:	
2200 CS/386 OS		SCRAP: X REWORK: _____	
MODEL NUMBER:		VERSION NUMBER:	
BASIC-2/386-U-9		1.30.00	
FIELD DISTRIBUTION:		EFFECTIVITY DATE:	
PUSH: X PULL: _____		04/19/94	
REASON FOR CHANGE:		COMMENTS:	
Maintenance Release		Version 1.20 structured but not released	

Change Item Status to 2:  
284-0153-9C, 295-7432-W9B, 295-7432-9B, 291-0808-D

Change BOM 195-7432-9 as follows:

WLI#	Description
Delete 295-7432-9	2200/CS386 Operating System
Add 295-7432-9B	2200/CS386 Operating System

Change BOM 195-7432-W9 as follows:

WLI#	Description
Delete 295-7432-W9	2200/CS386 Operating System
Add 295-7432-W9B	2200/CS386 Operating System

Change BOM 205-6048 as follows:

WLI#	Description
Delete 291-0808-A	A.E. 2200/CS386 Operating System
Add 291-0808-D	A.E. 2200/CS386 Operating System

Change BOM 205-6049 as follows:

WLI#	Description
Delete 291-0808-A	A.E. 2200/CS386 Operating System
Add 291-0808-D	A.E. 2200/CS386 Operating System

Change BOM 205-6050 as follows:

WLI#	Description
Delete 291-0808-A	A.E. 2200/CS386 Operating System
Add 291-0808-D	A.E. 2200/CS386 Operating System

Change BOM 205-6051 as follows:

	<u>WLI#</u>	<u>Description</u>
Delete	291-0808-A	A.E. 2200/CS386 Operating System
Add	291-0808-D	A.E. 2200/CS386 Operating System

Change BOM 206-6048 as follows:

	<u>WLI#</u>	<u>Description</u>
Delete	291-0808-A	A.E. 2200/CS386 Operating System
Add	291-0808-D	A.E. 2200/CS386 Operating System

Change BOM 206-6049 as follows:

	<u>WLI#</u>	<u>Description</u>
Delete	291-0808-A	A.E. 2200/CS386 Operating System
Add	291-0808-D	A.E. 2200/CS386 Operating System

Change BOM 206-6050 as follows:

	<u>WLI#</u>	<u>Description</u>
Delete	291-0808-A	A.E. 2200/CS386 Operating System
Add	291-0808-D	A.E. 2200/CS386 Operating System

Change BOM 206-6051 as follows:

	<u>WLI#</u>	<u>Description</u>
Delete	291-0808-A	A.E. 2200/CS386 Operating System
Add	291-0808-D	A.E. 2200/CS386 Operating System

Change Line Item Master Description as follows:

<u>WLI#</u>		Item	Status
284-0153-9B	Line2:	To: RPLXBY 284-0153-9C	3
295-7432-9	Line2:	To: RPLXBY 295-7432-9B	3
295-7432-9A	Line2:	To: RPLXBY 295-7432-9B	3
295-7432-W9	Line2:	To: RPLXBY 295-7432-W9B	3
295-7432-W9A	Line2:	To: RPLXBY 295-7432-W9B	3
291-0808-A	Line2:	To: RPLXBY 291-0808-D	3
291-0808-B	Line2:	To: RPLXBY 291-0808-D	3
291-0808-C	Line2:	To: RPLXBY 291-0808-D	3

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## BASIC-2/386 OPERATING SYSTEM - DESCRIPTION/STRATEGY

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12/17/92

### 1.1

Multi-user BASIC-2/386 Operating System (OS) Release 1.0, required for the CS/386-D and CS/386-N, has the following enhancements:

On an ~~80386~~ CS/386 CPU, ~~a~~ partition <sup>FROM 2K UP TO MAXIMUM AVAILABLE</sup> can be 8MB and all memory <sup>CREATED.</sup> can be ~~allocated to~~ <sup>WITH MAXIMUM</sup> ~~program~~ users can configure one 8MB partition, eight 1MB partitions, sixteen 500K partitions, or any combinations of partitions and RAMDISK, of any size, ~~for a total of~~ THAT DOES NOT EXCEED 8MB. THE PARTITION RESTRICTION OF NOT EXCEEDING 61K THAT EXISTED WITH THE NON-386 2200 CPU NO LONGER EXISTS. ~~THE~~ <sup>OF ANY SIZE</sup> ~~RESTRICTION~~ <sup>USED</sup> Any partition or multiple partitions can be ~~declared~~ <sup>PARTITIONS</sup> as universal global to all other partitions on the CS/386. This allows sharing of data and programs by several different partitions. Each regular partition runs its own programs and is independent of the other partitions. However, any partition can use the Universal Global partition. <sup>5%</sup> DOS UTILITIES INCLUDED WITH THE OPERATING SYSTEM <sup>USER TO DISPLAY THE ROOT DIRECTORY OF A DOS DISKETTE AND</sup> ~~allow~~ a BASIC-2 <sup>OFF</sup> program to read, and write, ~~MS-DOS~~ <sup>DISK</sup> files. ~~From~~ an MS-DOS diskette in the DS-1.2. FILES CAN ALSO BE COPIED TO AND FROM THE ROOT DIRECTORY OF THE DOS DISK TO A 2200 DISK/ ALL IN A DOS EMULATING ENVIRONMENT. <sup>DISPLAY, DELETE, OR RENAME THAT</sup>

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## BASIC-2/386 OPERATING SYSTEM - CONFIG. GUIDELINES/DEPENDENCIES

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12/17/92

### SYSTEMS SUPPORTED

CS/386-D and CS/386-N

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## BASIC-2/386 OPERATING SYSTEM - DOCUMENTATION

\$\$T

12/17/92

### FOCUS

Title

Date

Mature Computer Architecture Incorporates New Platform

05/15/89

\$\$T

BASIC-2/386 OPERATING SYSTEM - DISCONTINUED PRODUCT SUPPORT

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12/17/92

The following represents a list of select discontinued products that are currently supported. This list is not all inclusive.

- o Release 1.<sup>1</sup><sub>9</sub> is required to run the PC2200 terminal emulator, which allows a Wang PC240, 280, 380 to emulate a 2536DW workstation.

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BASIC-2/386 OPERATING SYSTEM - ADDITIONAL INFORMATION

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12/17/92

- o Release 1.<sup>1</sup><sub>9</sub> is required to run the PC2200 terminal emulator, which allows a Wang PC 200/300 series or IBM XT or AT compatible PC to emulate a 2536DW workstation.

Thursday

12/12/91

08:43 am

S OFFICE

Thursday

12/12/91

08:45

Page:

1

Package Subject: 2200 Basic ? package

Item Title: Read first

Mike -

I appreciate your continued interest in this 2200 Basic problem. Below is the text, verbatim, from the message I received via fax from the customer. I then called to confirm that he wanted the call closed, and he told me that is what he wanted. The relevant customer information follows:

John Barton	Phone: 313 824-1193
East Grand Development Associates	Fax: 313 824-8220
130 East Grand Blvd	CEDIC#: C 1935 1 1 1
Detroit, MI 48207-3799	Corp #: 00000464248
	CS386/2200 OS 1.10

Listed below is the verbatim text from the memo I received from John Barton on 10/17/91:

"Chris Seil  
Wang Labs Support

Since your last message and suggestion to me regarding the problem which I reported, I have talked with Mike Reilly, a member of the CS/200 group [ (800) 225-0654 extn 70524 ] about the problem. He confirms my conclusion that the problem is an OS bug with an early release of the CS/386 OS. The copy statement was known to generate a P48 error under the circumstances which I described.

He has added to the distribution list for the next release of the OS. The bug has already been fixed in current release, but I choose to wait for the next release since the program in which the statement is used is used only by me and is not is(sic) daily production use.

Thanks for your help.  
John L. Barton"

End of memo from John Barton.

If you wish to contact the customer and discuss this with him, or also discuss it with Mike Reilly, I have provided you the information necessary to talk with him. Also, if I am successful at manipulating our system, I will have enclosed the DP print file with the Call Tracking System call history. I have also attached in the package all our prior Wang Office correspondence between you and me, just for reference.

If you need me to reopen the call, or to assist you in any other way, please let me know.

Chris Seil

To: Michael Bahia  
From: Chris Seil  
Subject: 2200 Basic ? package

MS014-A3A/LOWELL  
Security: General  
Date Received: 11/14/91

Mike - I am just glad we've got people like you back there who are very much involved with making sure our customers are taken care of. It is the kind of work that you are doing that brings our customers back to us or retains them in the first place. In this particular case, the customer obviously had a greater knowledge of BASIC than I did, so I assumed he knew what he was talking about when he asked that the call be closed. Thanks for all you do.

Chris

To: Chris Seil	Original Memo
Subject: 2200 Basic ? package	From: Michael Bahia
	Date Sent: 11/14/91

Thanks Chris. That's fine. Hope you understand my concerns. Your followup is greatly appreciated.

Regards, Mike

W A N G L A B O R A T O R I E S , I N C .  
MANAGEMENT INFORMATION SYSTEMS  
REGIONAL SUPPORT CENTER CALL TRACKING SYSTEM  
CALL HISTORY

DATE 11/14/91  
PAGE NO. 2

WORK THIS CALL.

09/11/91	11:06 DLB ST 110 PHONE ANAL GROUP	ELAP	0.00
09/11/91	11:06 DLB ST 130 PHONE/CUST ACT	EXPECTED 09/16/91 17:00 ELAP	6.83
09/12/91	8:53 CSX ANALYST: NEW CSX OLD DLB	PRODUCT LINE: NEW	OLD
09/12/91	8:56 CSX TAKING CALL OVER FROM DAVID TO WORK THE BASIC ISSUE WITH JOHN.		

09/12/91	8:56 CSX ST 110 PHONE ANAL GROUP	ELAP	0.00
09/12/91	8:56 CSX ST 220 FAULT INV GROUP	ELAP	0.00
09/12/91	8:56 CSX ST 230 FAULT/CUST ACT	EXPECTED 09/16/91 18:00 ELAP	164.57
10/02/91	9:55 MNL MESSAGED CSX		

10/08/91 11:22 CSX CALLED JOHN TO DISCUSS THIS ISSUE WITH HIM.

10/08/91 11:29 CSX I APOLOGIZED TO JOHN FOR THE DELAY. HE SAID HE HAS BEEN MOSTLY OUT OF THE OFFICE FOR THE LAST FEW WEEKS ANY WAY AND WOULD HAVE BEEN DIFFICULT TO CATCH HAD I TRIED. HE WILL

RE FAX THE COPIES OF THE PROGRAM TO ME AND I WILL CALL HIM

10/08/91 11:30 CSX ACCOUNT PRTY: NEW OLD PROBLEM PRTY: NEW 3 OLD 2  
10/08/91 11:30 CSX BACK ON THURSDAY (HE IS OFF TO CALIFORNIA TODAY.)

10/08/91	11:30 CSX ST 220 FAULT INV GROUP	ELAP	0.00
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10/08/91	11:30 CSX ST 230 FAULT/CUST ACT	EXPECTED 10/10/91 18:00 ELAP	31.50
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10/10/91 10:31 CSX DISCUSSED THIS PROBLEM WITH JOHN. SUGGESTED, PER ERROR CODE P48, THAT WE MIGHT HAVE A PROBLEM WITH A SELECT STATEMENT.

JOHN SAYS THIS IS NOT THE CASE, BECAUSE THE STATEMENT WORKS IN IMMEDIATE MODE BY SIMPLY STRIPPING THE LINE NUMBER FROM

10/10/91 10:36 CSX THE STATEMENT AND EXECUTING IT, USING THE VARIABLE VALUES ALREADY PUT IN PLACE BY THE PROGRAM. CUSTOMER IS WORKING KFAM FILES, MAKING SECTOR TO SECTOR COPIES. DEVICE TABLE



W A N G L A B O R A T O R I E S N C.  
MANAGEMENT INFORMATION SYSTEM  
REGIONAL SUPPORT CENTER CALL TRACKING SYSTEM  
CALL HISTORY

DATE 11/14/91  
PAGE NO. 1

TRACK NO: 810516

CONTACT: JOHN BARTON

COMPANY: EAST GRAND NURSING HOME INC

PHONE (313) 824-8224 EXT.

CALL SOURCE: T CALL STATUS: 290 FAULT INV/CLOSED

CALLER TYPE: 01 START DATE: 09/09/91 ACCOUNT PRIORITY: 3

PRODUCT LINE: 2200 START TIME: 15:44 PRODUCT TYPE: 2200

REPEAT CALL: N PTR XREF: BLUE

REPEAT XREF: 000000 EMPL-NUMBER:

ANALYST ID: CSX SEIL CHRIS

PROBLEM DESC: CS386/2200; OS 1.10 WAS INSTALLED IN MARCH; 1 OF THE STATEMENTS

PROBLEM DESC: IN THE OS IS GENERATING AN ERROR WHEN RUN AS A PROGRAM

PROBLEM DESC: STATEMENT, BUT NOT WHEN RUN AS AN IMMEDIATE MODE STATEMENT////

PROBLEM DESC: \*\*PLS ADD S/N ZE1533 TO ACCOUNT\*\*CUST ACCEPTS CHARGES\*\*

PROBLEM PRY: 3

TRX DATE TIME USER CALL STARTED ON 09/09/91 ON 15:44

09/09/91 15:44 JBK ST 000 CALL DIRECTOR ELAP 0.05

09/09/91 15:47 JBK ST 110 PHONE ANAL GROUP ELAP 0.22

09/09/91 15:48 JBK TRIED RCR//NO ANSWER//TRIED ACD 425//BUSY//

09/09/91 16:23 DLB ANALYST: NEW DLB OLD PRODUCT LINE: NEW OLD

09/09/91 16:46 DLB JOHN SAID THAT HE HAS UPGRADED FROM A MICROVP TO A 386. HE

IS GETTING A P48 WHEN TRY TO COPY FROM ONE PLATTER TO ANOTHER

R. THE PROGRAM IS ONE THAT HE WROTE THAT REORGS THE KFAM FIL

E. IF HE RUNS THE STATEMENT BY ITSELF, ITS OK. IF HE RUNS IT

09/09/91 16:47 DLB FROM WITHIN THE UTILITY HE WROTE IT BOMBS. HE WILL SEND A

COPY OF THE STATEMENT TO ME VIA FAX.

09/09/91 16:47 DLB ST 130 PHONE/CUST ACT EXPECTED 09/09/91 17:00 ELAP 13.10

09/11/91 11:06 DLB CALLED FOR JOHN, OUT UNTIL MONDAY. CHRIS SEIL WILL PULL AND

W A N G L A B O R A T O R I E S, I N C.  
MANAGEMENT INFORMATION SYSTEMS  
REGIONAL SUPPORT CENTER CALL TRACKING SYSTEM  
CALL HISTORY

DATE 11/14/91  
PAGE NO. 4

WHERE NNNNN AND P P P P ARE SECTOR ADDRESSES. IN ALL CASES

10/14/91 7:41 CSX BUT ONE, THE "AT" AND "IN" NUMBERS ARE THE SAME. IN #11,  
THE "IN" NUMBER IS DIFFERENT FROM THE "AT" NUMBER. THIS IS  
ONE OF THE ADDRESSES THAT IS USED IN THE STATEMENT THAT IS  
FAILING.

10/18/91 15:29 CSX SPOKE WITH JOHN, FAXED HIM ANSWERS FROM MIKE BAHIA, CUSTOMER

THIS ANSWER ALSO PROBABLY NOT THE CASE. HE HAS RESPONSE F

ROM MIKE REILLY, MIKE THINKS IT IS OS BUG, HE WILL BE SENDIN

G JOHN NEW OS, CLOSING PER J BARTON WITH OPTION TO REOPEN IF

10/18/91 15:29 CSX NECESSARY.

10/18/91 15:29 CSX ST 290 FAULT INV/CLOSED ELAP 0.00

W A N G   L A B O R A T O R I E S,   N C.  
MANAGEMENT INFORMATION SYSTEM  
REGIONAL SUPPORT CENTER CALL TRACKING SYSTEM  
CALL HISTORY

DATE 11/14/91  
PAGE NO. 3

SHOWS VALUES RESIDING IN VARIABLES TO BE CORRECT.

10/10/91 10:39 CSX I TOLD JOHN I WOULD GET THE INFO TO MIKE BAHIA AT HQ.

CUSTOMER SUGGESTS SOMEONE NAMED MIKE REILLY.

10/10/91 10:41 CSX ADDITIONAL INFORMATION: ALL SECTOR TO SECTOR COPY STATEMENTS

FAIL IN PROGRAM MODE, EXECUTE CORRECTLY IN IMMEDIATE MODE.

ALL COPY STATEMENTS WHICH COPY ENTIRE FILES EXECUTE OK IN

PROGRAM MODE.

10/10/91 10:54 CSX PROFIT SEARCH ON P48 TURNS UP NOTHING. SEARCHING ON 2200 AN

D BASIC SHOWS 7 ITEMS, NONE OF THEM RELATED TO THIS ISSUE.

WILL SEE IF I CAN GET DOCUMENT IMAGED.

10/11/91 17:47 CSX HAVE BEEN ON PHONE MOST OF TODAY, HAVE NOT BEEN ABLE TO GET

INFO ENTERED TO SEND TO MIKE BAHIA. TRIED TO USE IMAGING TO

SCAN IN THE DOCUMENT, RON SANDS WAS NOT ABLE TO GET IT ONTO

THE SYSTEM. WILL TRY TO COME IN EARLY MONDAY TO GET JOB

10/11/91 17:47 CSX DONE. WILL STAY LATE MONDAY IF NECESSARY TO GET JOB DONE.

10/11/91 17:47 CSX ST 220 FAULT INV GROUP ELAP 0.00

10/11/91 17:47 CSX ST 230 FAULT/CUST ACT EXPECTED 10/14/91 18:00 ELAP 0.13

10/14/91 7:08 CSX CAME IN EARLY THIS MORNING. DETAILED WANG OFFICE MEMO SENT

TO MIKE BAHIA. (I TRIED TO SCAN DOCUMENTS IN VIA OCR,

COULDN'T GET IT TO WORK WITH RON SANDS HELP, SO HAD TO TYPE

OUT THE DOCUMENTATION FOR MIKE VIA WANG OFFICE.)

10/14/91 7:08 CSX ST 220 FAULT INV GROUP ELAP 0.00

10/14/91 7:08 CSX ST 230 FAULT/CUST ACT EXPECTED 10/16/91 18:00 ELAP 44.35

10/14/91 7:22 CSX AS I TYPED IN THE MEMO, I DISCOVERED A POSSIBLE ANOMALY IN

THE DEVICE TABLE. FOR ALL DEVICE ADDRESSES BUT ONE, THE

DEVICE TABLE SHOWS #N /DXX AT NNNNN IN NNNNN TO PPPPP

Item Subject: Bug

Torbjorn, This problem also exists on the VLSI CPUs. Tyler Olsen took a look at this & believes because you're adding something to the stack, you are creating an unresolved program, & so the error. Will pass this by our R&D people to see what they think. If you really want to pursue this problem a PTR should be opened for an official stance.

Regards,  
Mike

VS OFFICE Electronic Mail Monday 12/17/90 09:12 am Page: 4

Item Subject: Bug report

Torbjorn, Could you open a Customer PTR on this & send it to me at RDB 8760. This will make it easier to push through for a fix. Thanks.  
Regards,  
Mike

----- Original Memo -----  
To: Michael Bahia From: Torbjorn Sagner  
Subject: Bug report Date Sent: 11/21/90

Hi again,

Lars W. has found an other bug in os for 386.  
When you run a program and the press HALT and print an unused variable and the try to continue you get error P36 (Undefined Line Number or CONTINUE Illegal) Problem occurs in ver 1.15, 1.17, 1.19, 1.1A and i think all 386 OS's.  
Exampel: 10 DIM A\$(2)3  
20 A\$()-TIME  
30 GOTO 20

Run this program and then press HALT and then print B\$ and then try to continue, it will give you P36.  
Why is this important? Suppose that a you get an error in a big program with many open Data files and a lot of variables and you suspect that one variable, you print it to se what it contain and by mistake print a not used variable... P36

If you have any questions don't hesitate to call or wo me.

Best reg.  
Torbjorn

## FIXES

1.0

1.03

BANDPRINTER DROPPING CHARACTERS  
PRINT DRIVER PROBLEM

1.04

MATH PROBLEM (ULTRAFLOAT)

1.06

ALL DIFFERENCES W/ MYP 3.4 + C8/386 O/S

SELECT ON ALERT

PRINT USING NOT IN RIGHT PLACE

ADISCONNECT ON

MISSING SF KEYS

W/S ON/OFF HANG/PC EMULATION

REMEMBERS CPU # LOADING CURRENT CONFIG

1.07

PRINT DRIVERS ON 204

DISK HANG, PROGRAM CORRUPTION

1.08

A01 + A02 ERRORS

SELECT # 16/17/18 - VARIABLE

RENUMBER

X77, P55 W/ GLOBAL PARTITIONS (C9/2499)

1.09

G10 INSTRUCTIONS FOR IDEAS PACKAGE

G10 FOR KYBRD + PRTR W/ PC2200 EMUL FILE XFER

PLOTTER FIXED

1.0A

LISTV

A02, COULD NOT RESET

RESAVE OVERWRITES END OF FILE (LOOSE 1<sup>ST</sup> FEW LINES)

LISTD

## BUGS

MATH PROBLEMS (ULTRAFLOAT, TX FIXED IN 1.04)

BANDPRINTER DROPS CHARACTERS (1.03)

PRINTER DRIVERS (1.03)

IN + OUT OF EMULATION HANG (1.06)

RESETTING WS ON POWER UP W/ SYS UP HANG (1.06)

LOADING PROGRAM CORRUPTION, DISK HANG (1.07)

X77, P55 W/ GLOBAL PARTITIONS. SEG C9/2499 (1.08)

PRINT DRIVERS ON 204 (1.07)

RENUMBER - SYNTAX ERR - BLOWS O/S (1.08)

LISTV - ERROR 513

RENUMBER BRINGS DOWN SYSTEM (1.08)

LISTV IN CONJUNCTION W/ UNDECLARED GLOBALS

SELECT # 16/17/18 VARIABLE (1.08)

HANGS ON INITIAL BOOT TO O/S DISK SCREEN W/ TRIPLE CTRL (1.08)

COPY PROB WHEN ACTIVELY USING DISK (1.0A)

LISTV STILL PROB, S24 OR P34, CONT + SYS GOES DOWN (1.0C?)

MOVEFIL UTIL WON'T MOVE MARK FOR NEW 386 PROGS

CREATE A REFERENCE FILE DOES NOT RECOGNIZE NEW 386

PC2200 EMUL COMP CONCEPT: S/W 1.25 FILE XFER - G10 PROB (1.0A)

LOOSE O/S WHEN RESET AFTER I92 (C8/4527 PG 2)

LISTV STILL FAILS

RESAVE PROB - OVERWRITES END OF FILE (1.0A)

TIME/DATE STAMP FIXED (1.0B)

1.0A PRINT x S! w/ 2536DW  
 CONTINUED COPY WHILE DISK ACTIVELY USED (#OPEN)  
 PPMO17V3  
 MOVE TO EXISTING FILE

1.0B INPUT SCREEN  
 INPUT  
 DATE/TIME STAMP OPTIONAL, DEFAULT IS OFF  
 DISK ERROR CAUSING HOG IN DT  
 USING DEFFN' + GOSUB' PAIR w/ MISSING VAR, WRONG ERR  
 HANGS ON INITIAL LOAD TO DIS, DRAG SCREEN w/ TRIPLE CONTRL  
 204 PRINTER DRIVER DESELECTION C8/4186  
 #VARIABLES IN RELATED GOSUB/DEFFN DIFF, GET S10, SHOULD BE S11  
 1.0C ADD SELECT H ON/SELECT H OFF TO ALLOW HOG PLATTER FUNCT  
 ERROR 34 RECOVERABLE  
 FIX PRINT DRIVER BUG (NO CARR RET ON BACKGROUND TASK FOR 204)  
 NUMBGL SYSTEM BUG  
 ADDS STATEMENT #OPEN!340 + #CLOSE!340

1.10 NON PROGRAMMABLE PARTITIONS ALLOW EXEC OF PRG ON CMTNTH START PTR C8/7335  
 S16 WHEN GOSUB SAME IN 1 GLOBAL AS DEFFN' IN ANOTHER  
 SELECT T ON/SELECT T OFF TO ACTIVATE DATE/TIME STAMP  
 LIST SELECT - SHOWS ALL ACTIVE SELECTIONS  
 RECALLING IMMEDIATE MODE REM, OR IN PRG C8/7335  
 GENPART PROD USING SAME GENPART FOR 386 & VLSI  
 1.11 P59 REDEMENTIONING AN ARRAY IN AN OVERLAY

1.14 S16 ERROR UNDER CERTAIN CONDITIONS. PTR C8/7335  
 REMOVING SPACES ON AN IF THEN REM OR ERROR REM  
 PROBLEM HOGGING VIA SELECT H ON (MUST BE ALL 386 > DS R3)

1.15 DATALOAD AC OPEN PROBLEM  
 1.2 Mb DOS FORMATTED DISK (512 BYTE SECTOR) 2391 SECTORS  
 Err S16 w/ COPY IN FOREGROUND. C8/7335 b/z write  
 1.17 PACK/UNPACK MORE THAN 1 # TO LEFT OF DECIMAL ★

1.1A SELECT H ON, I90 DUE TO PLATTER HOG PRG  
 DATALOAD BRT/MTT, (9999.9) WORKED/SHOULD FAIL  
 S16, S20, S24 WITH GLOBALS

RECALLING IMMEDIATE MODE STATEMENT w/ REM<sup>1.13</sup>  
 PRINT USING  
 IN GENPART IF KEY SFOO, SF15 DISAPPEARS  
 INTERMITTENT & w/ TRIPLE CONTROLLER  
 COPY FROM SAME LINE IN FOREGROUND + BACKGROUND - S16<sup>1.10</sup>  
 P59 REDEMENTIONING AN ARRAY IN AN OVERLAY C8/7735<sup>1.11</sup>

PACK/UNPACK RETURNS WRONG # IF < 1 # TO LEFT OF DECIMAL<sup>1.17</sup>

PROBLEMS w/ PLATTER HOG, NOT WORKING, HANG I90<sup>1.18</sup>

# FIXES

# BUGS

LOAD RECEIVE CODE XSLATION

IF COPY TO A DRIVE POWERED OFF, HANGS SYS IF RESET

W/ SELECTION, IF HOG 3 ADDRESS W/ 1 #OPEN GET HANG CB/11061 #2.

I90 IF 156V RESET WHILE DOING SCRATCH, MOVE, & COPY W/ 2270A

INTERMITTENT SCREEN ON TRIPLE CONTROLLER BLANKS

1.1C SELECT HON. WHEN PRINTER HOGGED W/ SAME #OPEN CB/11061 #1

I90 ON SCRATCH, MOVE, & COPY W/ 2270A.

1.1M RESET, CLEAR, LOADRUN FROM SAME PART WOULD NOT CLR HOG

HEX 0A TO SHUT OFF EXPANDED PRINT AFFECTS PRINTUSING IF ON

LAST PORT OF MXE. P2/17083

W/ ARRAY > 32767 ELEMENTS, IF THEN ALWAYS INDICATES SAME VALUE

RUNNING BISKAK CAUSES I92/I93 ERRORS TO DISK. C9/4346

1.1Q I94 ON DATASAVE W/ SELECT H ON, MULTI CPU ENV C9/5044

DISK CATALOG SCRATCHED INTER IN MULTI CPU CONFIG C9/5009

CANNOT HOG A NON DISK DEVICE. 1.1S

HOGGING DOES NOT WORK W/ SELECT H OFF 1.1S

DS TAPE BACKUP HANGS WITH "WAITING FOR DS" 1.1S

1.1S IF > 1 # BEFORE, WITH COMBO OF PRINTUSING + CONVERT, GET

MISCALCULATION WITH FRACTIONAL #. P8/14181

LISTDETSP DOES NOT LIST SCRATCHED PROG IF IN 386 FORMAT.

IF HOG MXE TC PORT, RESET WON'T CLEAR.

SELECT H HANG PROBLEMS.

GOING TO WRONG DRIVE WHEN 2 PRINTERS W/ DIFFERENT

DRIVER SAME TIME PRINT, ESP EXPANDED. P2/17139

W/ LASRJV1 DRV & 2200WP, C FOR F ON TOP OF PAGE

TC ADDR HOGGED COULD BE CLEARED W/ #CLOSE FROM DIFF PARTIT.

KATAKANA DAKOUN (HOG 7E) AFTER REM% CAUSES REST OF LINE TO BE IGNORED

DS TAPE BACKUP HANGS W/ "WAITING FOR DS" 1.1Q

CANNOT HOG A NON DISK DEVICE. 1.1Q

HOGGING DOES NOT WORK W/ SELECT H OFF 1.1Q

1.1K W/ SELECT H ON, IF KEY RESET TO CLEARS HOG OF SLAVE ADDRESS, RENUMBER PROG, LIST # DOES NOT LIST ALL CROSS REF'S

2ND PARTITION W/ H OFF TRYING TO HOG DOES NOT CONTINUE

SELECT H FIXED

1.1Y IF HOG MXE TC PORT W/ 1 PART, 2ND PART COULD CLR W/ #CLOSE

IN KATAKANA RENUMBER WOULD NOT CORRECTLY CHANGE SOME

GOTO LINE #'S

## FIXES

## BUGS

1.1y CONTINUED IN KATAKANA LIST' WOULD INCORRECTLY CROSS-REFERENCING SOME GOSUBS WHICH ARE FOLLOWED BY REM STMTS

1.1z LIST # DOES NOT CROSS REFERENCE ALL LINES MEANING RENUMBER WILL FAIL. CAN DUPE PROBLEM WITH THE FOLLOWING ON LINE 1225 DATA .5

1.29.00 PARTITION HANG - FIXED WHERE IF AFTER POINTING AT A STACK ADDRESS OF FF, TRIES TO ADDR 340 OR EXTERNAL PRINTER.

1.29.01 PROGRAM SAVED IN NEW FORMAT WITH WRAP MODE CONTAINING SF KEY DEFFN WOULD BLOW O/S IF PROGRAM LOADED & DEBATED SF KEY HIT BEFORE EXECUTING. RESAVE DID NOT WORK PROPERLY IN PROGRAM MODE IF ENLARGING PROGRAM IN CONJUNCTION W/ ON ERROR.

1.29.02 (1.30.00) IF IN IMMEDIATE MODE A STRING OF 81 IS ADDS IN A PRINT COMMAND, THE O/S WILL BLOW. SELECT NEW WOULD DEFAULT TO OLD AFTER LOADRUN OR CLEAR

PARTITION HANGS IF AFTER POINTING TO A STACK ADDRESS ENDING IN FF, TRIES TO ADDR 340 OR ACCESS EXT PRINTER (1.29.00)

CAN BLOW O/S IF PRINT 87 + 1s IN IMMEDIATE MODE IF A PROGRAM SAVED IN WRAP MODE IS NEW FORMAT IS LOADED & NOT EXEC, HITTING A DEFINED SF KEY BLOWS O/S (1.29.01)

THE RESAVE AND SAVBDCT DO NOT IN SOME CASES WORK IN PROGRAM MODE FOLLOWING AN ON ERROR. MB/20511 (1.29.01)

SELECT H PERFORMANCE IS ERATIC W/ 2 CPUs UNDER CONSTANT ACCESS. MA/5029



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# **WANG MULTIUSER BASIC-2/TURBO OPERATING SYSTEM REL 1.30.01 - CONTENTS**

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715-3997A

1st Edition - March 1994

## **PREFACE**

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## PREFACE

This Wang Multiuser BASIC-2/Turbo Operating System Customer Software Release Notice provides information about Release 1.30.01 of the Wang Multiuser BASIC-2/Turbo Operating System.

Intended for all users, this release notice is organized as follows:

- Chapter 1 provides an introduction to this release of the Wang Multiuser BASIC-2/Turbo Operating System software, including hardware and software requirements.
- Chapter 2 describes the enhancements added to this Wang Multiuser BASIC-2/Turbo Operating System.
- Chapter 3 describes the problems that are corrected in this release of the Wang Multiuser BASIC-2/Turbo Operating System.
- Chapter 4 discusses the special considerations needed to run this release of the software including known anomalies.
- Chapter 5 describes the contents of the media you can install on your system as part of this software release.
- Chapter 6 details how to install this operating system using 2 of the utilities included with the software.

Refer to the following documents for additional information about the Wang Multiuser BASIC-2/Turbo Operating System:

- CS-D User's Guide (715-2364A)
- BASIC-2 Utilities Reference Manual (700-3949A)
- Multiuser BASIC-2 Language Reference Manual (700-4080F)

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## CHAPTER 1 – INTRODUCTION

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### OVERVIEW

This chapter discusses the features of Release 1.30.01 of the Multiuser BASIC-2/Turbo Operating System and details the system hardware and software requirements.

### SUMMARY OF FEATURES

The Wang Multiuser BASIC-2/Turbo Operating System is designed for interactive programming and ease of use. This release, 1.30.01, is a general release replacing general release 1.10 as the operating system of choice on the CS/Turbo line of computers.

The following command calls have been enhanced or modified since the last general release of the Turbo O/S, 1.10:

SCRATCHDISK&	(newly supported in this release)
SELECT 3 ON/OFF	(newly supported in this release)
SELECT NEW/OLD	
MOVE	

The following command calls were previously added or modified but were not documented in earlier CSRN's:

\$MOVE!/\$MOVE&  
\$CLEAR xxx  
COM  
DIM  
GOSUB'/DEFFN'  
LIMITST

The following utilities have been enhanced or modified since the last general release of the Turbo O/S, rel 1.1:

BACKUP Utilities  
RESTORE Utilities  
DISK MANAGEMENT Utilities.....(previously DS Utilities)  
DOS Utilities  
FORMAT utility  
INITIALIZE DATE and TIME utility\*  
MOVE FILE utility  
MOVING a SELECTED LIST of FILES utility....(previously Make a Reference  
List of File Names)  
PARTITION GENERATOR utility  
PARTITION STATUS utility  
SYSTEM INSTALL utility

\* Minor change made to allow auto conversion to 'NEW' format. No further information is in this CSRN.

## SYSTEM REQUIREMENTS

The following hardware and software requirements and concerns should be considered when changing over to Basic-2/Turbo Release 1.30.01.

### Hardware

must include:

- a Wang CS/386-400/800/1600/3200D/N or a CS-D/N, CS, or MicroVP with a Turbo upgrade (Turbo CPU board (210-9576A) and motherboard).
- Turbo CPU Board must have R3 Proms at locations L50 and L64. Place a service call and request FCO 1501, FCO Kit # 728-0443<sup>1</sup>.
- All MXF Controllers (212-9717) must have R4 proms at locations L7 and L14 of the 9579A I/O Processor Board. Place a service call and request FCO 1502, FCO Kit # 728-0444<sup>1</sup>.
- All 22C11-HS Printer/Disk Controllers (212-9718) must have R2 proms at locations L7 and L14 of the 9579-1A I/O Processor Board. Place a service call and request FCO 1503, FCO Kit # 728-0445<sup>1</sup>.
- a 2200 terminal
- a 5 1/4-inch diskette drive

<sup>1</sup> NOTE: If running O/S 1.18 or higher, proms should already be correct.

### Software

#### From Existing Turbo CPUs:

All software currently running on any supported Turbo Release is fully compatible with release 1.30.01. If using '3 Byte Addressing' (disk addresses greater than 16 Meg) please see Chapter 3, Corrected Problems.

#### From CS/386 CPUs:

All programs that run on the CS/386 should run on the Turbo without modification with the following exceptions:

- CPU Type Status Byte 9: partition status line byte 9 represents the CPU type. For the Turbo this byte is a 'T', on the CS/386 a 'W', and on the MVP/LVP/MicroVP/CS an 'M'. Programs using this byte will need to be updated to recognize the 'T'.
- Programs using the embedded CPU Prom ID Number as a security measure preventing programs from executing on other systems where the prom ID would be different.

#### From non-386 2200 CPUs (MVP, LVP, CS, etc.):

Most programs from non-386 2200 CPUs will run without modification. However, any program that makes a reference to a specific Operating System resource may require a change. These resources include:

- Imbedded CPU Prom ID Number: this number can be used by a programmer to provide security preventing programs from executing on other systems where the prom ID would be different.

- Partition Size: programs require more memory to execute on the Turbo and CS/386, approximately 80% more than on older 2200 CPUs. If a program makes a calculation based on partition size, a change may be required.
- CPU Type Status Byte 9: partition status line byte 9 represents the CPU type. For the Turbo this byte is a 'T', on the CS/386 a 'W', and on the MVP/LVP/MicroVP/CS an 'M'. Programs using this byte will need to be updated to recognize the 'T'.
- Partition Status Line Bytes 10 and 11: on the non-386 CPUs byte 10 denotes memory bank and byte 11 partition. With the Turbo there are no memory banks and both bytes are used for partition size.
- Floating Point Numbers: the 386 chip was built with 10 digit accuracy while the older CPUs provided accuracy to the 13th digit. If a program makes a decision based on the 11th to 13th digits to the right of the decimal point, a problem could occur as these numbers could be slightly different on the Turbo.
- Header Record for Programs: proper disk protocol requires the first byte of the header record for all programs in a disk catalog to be either 40, 50, 60, or 70. If the 2nd half of this byte is other than '0', an A01 error could occur loading this program even though on older systems this would not be a problem.
- 'NEW' or '386' Format: programs loaded into memory on the Turbo and CS/386 are converted into a '386' format. This conversion process can slow down load time of a program, especially when multiple program loads are occurring. Although with the speed of the Turbo this may not be that noticeable, it is recommended all programs on the system be converted to 'NEW' format for maximum performance. This can be done file by file with the SAVE command after executing a SELECT NEW command or by disk catalog using the \$MOVE! command. Unfortunately some programs containing long lines may require those lines to be split to enable conversion. The \$MOVE! will identify those lines but the actual change must be done manually. See Chapter 2, Enhancements for more information on SELECT NEW and \$MOVE!. Once converted to new format, a program will not run on the non-386 CPUs. They can be converted back if needed using the \$MOVE command with the & option.

Release 1.30.01 is user installable. Follow the instructions for installing the operating system as described in Chapter 6 or refer to the introductory or user manual supplied with your Turbo system. If your boot procedure has been customized or you are unfamiliar with the steps outlined for upgrading, you should contact your system's programmer or the Wang Regional Support Center at 1-800-247-9264.

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## CHAPTER 2 - ENHANCEMENTS

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### OVERVIEW

This chapter describes new features and enhancements provided in Release 1.30.01.

### ENHANCEMENTS OF RELEASE 1.30.01

#### Command Calls

##### **SCRATCHDISK&** (newly supported and enhanced in this release)

The '&' option has been added to the standard SCRATCHDISK command. It is used to create a 3 byte disk catalog on a DS or CS-D hard disk when used in conjunction with the DS R4 prom. It extends the allowable index size from 255 sectors to 65535 sectors and the catalog end from 65535 to 16,777,215, but not to exceed the available sectors at that address. For more information on 3 byte addressing read the write-ups in this section on the SELECT 3 ON/OFF and MOVE commands.

##### **SELECT 3 ON/OFF** (newly supported and enhanced in this release)

The SELECT 3 ON command is used with 3 byte addressing, an optional Turbo feature used in conjunction with the DS or CS-D R4 prom. It is used to tell the system to read a 3 byte field instead of 2 when using alphavariabls for addressing in disk commands. It also allows the system to accept sector addresses beyond 65535 in standard disk commands. Under the standard disk catalog method only 2 bytes are allowed for disk addresses which makes 65535 the highest address available. Three byte addressing provides 1 additional byte for each address entry in the disk catalog. This allows the user to create a disk catalog which can extend beyond 65535 sectors and/or an index greater than 256 sectors. Because alphavariabls can be used with some disk commands for sector addresses and are read from left to right, the system must know if a 2 byte field or a 3 byte field is to be read. This is the most critical purpose for this command. SELECT 3 must be set correctly if using alphavariabls for addresses in disk commands. Failure to have SELECT 3 set properly when using alphavariabls for sector addressing could corrupt your disk. If not using alphavariabls for sector addressing, SELECT 3 can be left ON. It will not otherwise affect operations with standard disk commands. New with this release, SELECT 3 ON is also used as a safety measure. It must be on to use sector addresses beyond 65535 with disk commands not using the '&' identifier to prevent accidental and inadvertent errors that could occur otherwise. The status, ON/OFF, for SELECT 3 can be checked with the LIST SELECT command.

Note: The DS R4 Prom upgrade can be ordered through Wang Telesales, telephone 1-800-TEL-WANG. It includes the prom, Disk Utilities Software, and documentation needed to upgrade your DS or CS-D. Model number for the upgrade: 200-DSR4UJ price: \$99.50

## **SELECT NEW/OLD** (enhancement in this release)

The SELECT NEW command causes all programs saved to disk using the SAVE or RESAVE command to be written to disk in 'NEW' or '386' format. Standard 2200 programs are normally stored on disk in a binary-coded-decimal format. On the non-386 CPUs, this was the native format used by the operating system. The 386 processor does not recognize this format and requires programs to go through a conversion process when loading into memory. This conversion can negatively affect program load performance. If stored in NEW format on disk, conversion is no longer necessary. Some programs may require certain lines to be split in order to be stored on disk in 'NEW' format. Because programs require more space in this format, long lines of 190 bytes or more could exceed the 256 byte line limit when converted which would cause an error during conversion. A new command available with the Turbo can help to automate the conversion. See the write-up in this section on the \$MOVE! command for more details. Programs in 'NEW' format can be identified with a LIST DCT command by a (') next to the 'P' in the file 'TYPE' field.

New with this release, once executed for a partition, SELECT NEW remains active until the SELECT OLD command is executed. Also with this release, all files<sup>1</sup> have been modified as necessary to convert to 'NEW' format smoothly without requiring any line splits.

- <sup>1</sup> NOTE: The boot menu program, @BOOT, must not be converted to 'NEW' format. It must be in standard 2200 format or the system will hang during the standard boot procedure used to load the O/S.

SELECT OLD causes all programs written to disk with the SAVE or RESAVE command to be stored in the original binary-coded-decimal format recognized by the non-386 CPUs. This is the default on power up.

## **MOVE** (enhancement in this release)

The MOVE command has been enhanced to dynamically allow the creation of a 3 byte index or a 2 byte index on the output disk regardless of the index type on the input disk. The syntax for this is as follows:

MOVET/Dxx, TO&T/Dxx	creates a 3 byte index on the output disk
MOVET/Dxx, TO'T/Dxx	creates a 2 byte type 1 index on the output

After the 2nd address, the index size (LS=#) and catalog size (END=#) can optionally be given by using a comma between each field given. If not given, the MOVE command creates the same index type on the output as found on the input. For more information on 3 byte addressing read the write-ups in this section on SELECT 3 ON and SCRATCH DISK&.

## **\$MOVE!/&** (new command with Turbo previously undocumented)

The \$MOVE!/& command was added in Turbo release 1.0 but was never documented. It provides a semi-automated process for converting standard 2200 programs to and from 'NEW' or '386' format. See the

write-up on the SELECT NEW command in this section for an explanation of 'NEW' or '386' format.

Conversion to 'NEW' format is highly recommended for maximum performance. (See note<sup>1</sup> under SELECT NEW in this section for exception.) Once in 'NEW' format, programs cannot be read on non-386 CPUs. They can be converted back to 'OLD' with \$MOVE&. Programs in new format can be identified with a LIST DCT command by a (') next to the 'P' in the file 'TYPE' field.

With this command the user can convert either an individual program or all programs on a specified disk from 'OLD' to 'NEW' format during a 'MOVE'. If for some reason a program can not be converted, the program name, an error code, and the line number if appropriate where the conversion failed will be displayed on the screen. Most errors occur because of long program lines. Programs in 'NEW' format take more memory and if an existing program line contains approximately 190 characters or more, on conversion it will likely exceed the 255 character line limit. If this is the case, the line would need to be manually split. For added convenience, this command also has an option to save the names of all files it is unable to 'MOVE' in a datafile. Once the indicated problem for these files is resolved this datafile can then be used with the \$MOVE! to try again to convert these same files. Existing files on the output disk are not affected. If the program already exists on the output disk it will not be moved. Only program files are moved with this command. The 'MOVE a SELECTED LIST of FILES' or 'MOVE FILE' utility can be used to move existing data files for the same disk. Also note that these programs will also take up more disk space after conversion. Programs in both BCD (OLD) format and '386' (NEW) format may reside on the same disk.

The syntax for this command is as follows:

```
$MOVE ! T /Dxx , "program" TO T /Dxx , "outfile"  
      &  #x      "infile"      #x
```

- ! - option to convert program/s from 'OLD' to 'NEW'
- & - option to convert program/s from 'NEW' to 'OLD'
- /Dxx - opt after 1st T, input addr; after 2nd T, output addr
- #x - opt after 1st T, input file #; after 2nd T, output file #
- "program" - option to convert only this program name given
- "infile" - optional data file on the input address consisting of the program names that failed to convert, originally created by the \$MOVE! as "outfile".
- "outfile" - optional datafile name which must be open on the output address which will store the filename, error code, and line number for each program that cannot be converted.

outfile/infile format: 16 byte entry for each program that fails to convert:

First 8 bytes	- program name
9th & 10th bytes	- error code
Last 6 bytes	- line number



**\$CLEAR xxx** (new command with Turbo previously undocumented)

The \$CLEAR command is used to clear the printer buffer on the 22C11-HS Printer/Disk Controller. xxx is the address of the printer port.

**COM** (command enhancement for Turbo previously undocumented)

The COM command has been enhanced to accept larger 2 dimensional arrays as follows:

COM A\$(65535)124 limits on all supported non-Turbo CPUs  
COM A\$(up to available memory)124 Turbo only

Note: The MATMERGE, MATSORT, MATMOVE, and MATSEARCH commands will not support array parameters beyond 255. When using these MAT commands on the Turbo, care must be taken to insure the 255 limit is not exceeded. Data integrity could be affected.

**DIM** (command enhancement for Turbo previously undocumented)

The DIM command has been enhanced to accept larger 2 dimensional arrays as follows:

DIM A\$(65535)124 limits on all non-Turbo CPUs  
DIM A\$(up to available memory)124 Turbo only

Note: The MATMERGE, MATSORT, MATMOVE, and MATSEARCH commands will not support array parameters beyond 255. When using these MAT commands on the Turbo care must be taken to insure the 255 limit is not exceeded. Data integrity could be affected.

**GOSUB'/DEFFN'** (command enhancement for Turbo previously undocumented)

The integer parameter used with marked subroutines for GOSUB'/DEFFN' has been increased from 0-255 to 0-65535 for Turbo only.

GOSUB'0-65535 (arguments)  
DEFFN'0-65535 (arguments)

**LIMITS T** (command enhancement for Turbo previously undocumented)

Two new arguments have been added to the LIMITS command now giving it 6 arguments. The 2 new fields are index sector and index type. These 2 new fields are only supported on the Turbo.

LIMITS T "filename",A,B,C,D,E,F

where: A is start sector  
B is end sector  
C is sectors used  
D is status  
E is index sector  
F is index type

## **Utilities**

### **Backup Utilities**

Backup Utilities is a new menu pick from the main menu which encompasses the available backup to disk and tape procedures that come with the Turbo operating system. It includes the 'Backup Platter' utility and DS disk to tape backup program. Backups created with these utilities must be restored with the corresponding Restore Utility program. The SCSI disk to tape program is also included for those sites using the unreleased 22C11-SCSI Controller.

### **Restore Utilities**

Restore Utilities is a new menu pick from the main menu which encompasses the available restore from disk and tape procedures that come with the Turbo operating system. It includes the 'Recover from Backup' utility and DS tape to disk restore program. These utilities are to be used specifically with the corresponding Backup Utility program. The SCSI tape to disk restore program is also included for those sites using the unreleased 22C11-SCSI Controller.

### **Format Disk Platter**

The FORMAT program has been updated to allow creation of a 3 byte index. To allow this option, remove both instances of REM% from line 935. The REM% command provides compatibility to both the CS/386 and the non-386 CPUs by hiding commands not supported on those CPUs. To set up a 3 byte address, type in 'TRI' as the index type when creating the index after formatting.

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## CHAPTER 3 - CORRECTED PROBLEMS

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### OVERVIEW

This chapter discusses the problems corrected in Release 1.30.01.

### PROBLEMS CORRECTED IN RELEASE 1.30.01

Release 1.30.01 corrects a number of reported problems to the operating system since the last general release, 1.1. In addition, it also includes corrections to problems identified with some of the utility programs.

#### Operating System

The following problems are corrected in this release. Some of the problems listed may not have been present in the previous general release, 1.1, but may have occurred due to changes made to resolve an existing problem in 1.1 or a subsequent maintenance release.

Corrects a problem with assigning Printer Drivers to address 204 for terminals beyond the first 16.

Fixes a problem where a MXE TC port might not show up in the Device Table as well as problems hogging those TC addresses.

Corrects a problem where with 3 byte addressing there could be a problem saving multiple data files with DATA SAVE DC OPEN.

Corrects a problem where math calculations resulting in an exponent greater than E99 could give an incorrect answer when they should give an error.

Resolves the terminal hang issue associated with the LINPUT and KEYIN commands where the terminal would intermittently not respond to a keyboard entry.

Corrects a problem where printer drivers would not show up for any controller following an MXE or MXD.

Corrects a problem where if using address 405 to PRINT to the screen, linefeeds would not be suppressed.

Allows the SCSI floppy to read a 256 byte 360K or 1.2M 2200 diskette.

Corrects a problem where a rewind or retension of SCSI tape would fail with a virgin tape.

Corrects a problem where if a REM% was followed by a hex 7D or hex 7E character, all subsequent commands on the same line would be ignored.

Corrects an intermittent hang which could occur when mux'ing 2 CPUs to 2 disk drives if 2 or more partitions from each CPU were hogging addresses in both disk units.

If a program was enlarged to require an additional sector and resaved within a program, the RESAVE would appear to successfully execute but the saved file would be blank.

If in immediate mode a string of 87 ls were added in a PRINT command, the O/S would blow and the system would need to be rebooted. Other long string combinations could also cause problems.

Commands on the same line as a DEFFN' command may not execute if in a Global with a higher partition # than the calling partition.

The RENAME command could corrupt data if used with a 3 byte address.

The LOADDAT and SAVEDAT commands would not work on a 3 byte address beyond 65534.

If an address with more than 65535 sectors had been scratched as a standard 2 byte catalog with less than 65535 sectors, a MOVEEND command beyond 65535 could be executed without an error and could corrupt the index. Now it correctly returns an illegal value.

If a COPY command resulted in an error, the address involved could be locked out to all other users unless that same partition issues a RESET or reaccesses that address before another partition does.

If an address with 65535 sectors or more was scratched for 65535 sectors, the End Catalog Area would show an invalid address. To set the Catalog End to 65535, a 3 byte address must be created.

The MOVE command would cause the Catalog End to be set to the Current End. It now correctly uses the Catalog End from the input address unless otherwise specified.

A SCRATCH statement with an index greater than 255 sectors or a catalog greater than 65535 would automatically create a 3 byte index. SCRATCHDISK& must now be used with any value requiring a 3 byte catalog, otherwise an error P34, illegal value will occur.

The COPY and VERIFY commands would not work with addresses of 65535 or higher with SELECT 3 ON.

File name entries saved to a 3 byte index were positioned 1 sector off on releases 1.1 and 1.15 and could not be found specifically by name with corrected releases. Sector 0 was not being used. File entries which should have been in the last sector of the index would end up in the first sector following the index if a program immediately followed the index. If a datafile followed the index, index entries could be written farther out in the catalog possibly corrupting files.

## Utilities

### Disk Management Utilities ver 1.1 (formerly DS Utilities)

The following problems were corrected in the DS Configuration program since release 1.1 of the Turbo Operating System:

The configuration program will now appropriately respond to other responses besides 'Y' when responding to the 'Apply Y or N?' prompt to partition the hard disk drives in a DS unit with an R4 prom.

Corrected the configuration utility Default option to respond correctly. Would intermittently give an 'illegal' message.

System will now warn you if a configuration filename is used which already exists and will ask to "Overwrite, Y/N?".

Several changes were made to insure proper screen display. On some screens lines could be bumped up or off the screen and on others messages were not properly cleared away.

Updated prompts that accepted alpha responses to accept both small and capital letters.

When running the configuration utility to partition the drives, entering a sector address greater than 65535 is no longer accepted with the non-Turbo CPUs.

When running the configuration utility to partition the drives, indicating yes to use the DS Defaults now correctly assigns drives on Drive Select 1 and 2 to Master addresses and drives on Drive Select 3 and 4 to Slave addresses.

If running the configuration utility to partition the drives, the program will now indicate an 'Illegal Configuration' if a drive is not connected to Drive Select 1.

### DOS Utilities

The following problem was corrected in the DOS Utilities:

If an error occurs formatting the B drive, the utility will not indicate an error with the A drive. The following error message is returned: 'Read Error or bad Write'.

### Format Disk Platter utility (ver 2.0)

The following problems have been corrected in release 2.0 of the Format Utility since release 1.1 of the Turbo Operating System:

The utility will now always recognize the 5 1/4" drive and ask if a DOS or 2200 format is to be used.

The utility will now display the format error message immediately should it occur instead of returning to the 'Mount disk' screen.

The Format Utility will now return the 'Format Completed' message after doing a DOS format to a 5 1/4" floppy.

The Format Utility now properly recognizes if a 5 1/4" floppy has an index already when choosing a DOS format and will ask if you still want to format.

The Format Utility will now recognize a Phoenix removable disk or an LVP DSDD floppy drive and format it.

Address B10 is now recognized as a removable address.

### **Move File utility**

The following problems were corrected in the Move File utility since release 1.1 of the Turbo Operating System:

Line 290 has been split to allow conversion to 'NEW' format on the fly.

If moving a file or files to a 3 byte address would come back and indicate output file full. Now returns message "3 Byte Addressing not supported".

### **Moving a Selected List of Files** (formerly Make a Reference List of File Names)

The following problems have been corrected in this utility since release 1.1 of the Turbo Operating System:

This utility will now test for a 3 byte index and if found will indicate 3 byte addressing is not supported.

This utility has been updated to properly work with a 2275 floppy when used with the Turbo. Due to an unresolved Turbo bug with the 22C11-HS Controller, when testing the floppy in a 2275 unit the system would verify the entire disk and fail with an I98 instead of verifying just the first sector as requested in the program.

### **Partition Generation program**

The following problems have been corrected in the Partition Generation program since release 1.1 of the Turbo O/S:

A configuration larger than 8 Meg can now be successfully created. Previously a 'partition too large' message would display.

A configuration with more than 16 partitions created on a Turbo can no longer be inadvertently loaded on a CS/386 CPU blowing the operating system. The message, "Invalid Configuration" is returned.

A compatibility issue with non-386 CPUs has been corrected which could cause an "invalid configuration" message when booting the same configuration for a second time.

## **Partition Status program**

The following problem has been corrected in the Partition Status program since release 1.1 of the Turbo O/S:

When running the Partition Status program from a terminal without a 'NEXT' or 'PREV' key, there was no way to tell how to display partitions beyond the first 16. A message is now displayed indicating SF'12/NEXT for next screen, SF'13/PREV for previous screen.

## **System Install utility**

The following problem has been corrected in the System Install utility since release 1.1 of the Turbo O/S:

The install program now checks for a 3 byte address at both the input and output addresses and will indicate 3 byte addresses are not supported if one is found.

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## CHAPTER 4 - SPECIAL CONDITIONS

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### OVERVIEW

This chapter discusses the special conditions for this release of the Wang Multiuser BASIC-2/Turbo Operating System software.

### SPECIAL CONDITIONS

This release of the Operating System requires:

- a CS/386-400/800/1600/3200N/D or a CS, CS-D/N, or MicroVP with a Turbo upgrade (CPU/Mbrd). The CPU board (p/n 210-9576A) must have rev R3 proms at locations L50 and L64 per FCO 1501, p/n 728-0443<sup>1</sup>.
- All 2236MXF Controllers (p/n 212-9717) must have the latest proms, revision R4 at locations L7 and L14 of the 210-9579A I/O Processor Board per FCO 1502, p/n 728-0444<sup>1</sup>.
- All 22C11-HS Printer/Disk Controllers (p/n 212-9718) must have the latest proms, revision R2 at locations L7 and L14 of the 210-9579-1A I/O Processor Board per FCO 1503, p/n 728-0445<sup>1</sup>.

The System Install utility has been specifically modified to work with this release of the Turbo O/S. Older version are not compatible. See Chapter 6 for details on installing Release 1.30.01.

<sup>1</sup> NOTE: If running O/S 1.18 or higher, proms should already be correct.

### KNOWN ANOMALIES

The following is a list of known anomalies with Turbo release 1.30.01 as of the date of this publication.

Workstation intensive processes can be negatively impacted when upgrading from Turbo O/S 1.1 when running at the same time as certain disk processes. This problem would be completely dependent on the job mix running. If you believe you are encountering this problem or something similar, contact the Wang Regional Support Center at 1-800-247-9264. There is an alternative operating system available, release 1.25 which should resolve this condition.

Circumvention: 1) Avoid running disk intensive processes while heavy screen activity is taking place. 2) Change to release 1.25 Turbo O/S.

The High Speed printer buffer has a 1 character overflow. If the data string sent to the printer exceeds the remaining space in the buffer a hang occurs.

Circumvention: 1) Avoid big print jobs to slow printers. 2) Use a faster printer on the HS port. 3) Use a standard printer controller.

A GIO sequence which works with the 386 and on the old bus to determine if the printer is READY or NOT READY can cause the 22C11-HS disk port to hang or severely slow down.

Circumvention: 1) Do not test for READY using GIO commands when using the HS printer port. 2) Use a standard printer controller.



A special machine code command to check printer ready can cause a problem with the high-speed printer port on the 22C11-HS. This program works perfectly with the old bus indicating READY or NOT READY as applicable. On the 22C11-HS, READY is usually indicated even without a printer connected. If the command is looped on while the printer is deselected, within approximately 5-10 minutes the system is hung until the printer is selected.  
Circumvention: 1) Do not test for READY using GIO commands when using the HS printer port. 2) Use a standard printer controller.

After a warm boot, \$INIT"SYSTEM", if using a printer with a buffer such as the PM017 on the 22C11-HS, some garbage characters will print out preceding the first printed data.  
Circumvention: 1) After a warm boot run a print test to clear the printer's buffer. 2) Power the printer off and on after a warm boot.

Intermittent I90 errors occur if using the 22C11-HS Mux port. The more terminals controllers in the Turbo the more likely the problem.  
Circumvention: Use the 22C80 Disk Controller for muxing in place of the high speed Mux port.

If using the 22C11-HS Mux port to boot, all other CPUs using the common 2275MUX will be locked out of all access through that controller until @GENPART is loaded.  
Circumvention: Use the 22C80 Disk Controller for muxing in place of the high speed Mux port.

If a Turbo housing a 2275MUX is powered off and on, all access by secondary CPUs through the 2275MUX will hang until either RESET is keyed on the CPU attempting access or the Turbo accesses that address.  
Circumvention: If this situation should occur, key RESET on the hung CPU or try to boot from the mux'd drive immediately after reapplying power even if no O/S resides there.

If boot diagnostics are executed on the Turbo through a 22C80, all disk access by other CPUs through the common 2275MUX will hang until the diagnostics are exited.  
Circumvention: Do not run boot diagnostics from a mux'd drive when that drive is needed by other systems. Run on-line tests which are much more effective.

VERIFY does not work properly with the 2275 if verifying just sector 0 using the 22C11-HS. The entire disk is verified.  
Circumvention: Verify at minimum sectors 0 and 1.

The MAT MERGE/MOVE/SEARCH/SORT will accept arrays with parameters exceeding 255 rows or columns. However, the system cannot reliably handle data beyond those limits. Manipulating an array in a MATMOVE which exceeds those parameters can result in system hangs or data integrity errors.  
Circumvention: Add a program check that limits the size of any array used with MAT commands to a maximum size of 255.

The INPUT CURSOR command may intermittently hang.  
Circumvention: Avoid using this command.

LISTS & LISTSD do not work correctly to a system or terminal printer. If the printer requires a printer driver it will not linefeed. If the printout should take more than 1 screen, the 2nd screen does not occur.  
Circumvention: 1) Avoid using the S option with printers which use a print driver. 2) Use line numbers to signify first and last lines to list.

If 2 partitions are constantly accessing the same DS, only 1 with SELECT H ON, the partition using SELECT H ON will hang until the 2nd partition finishes if using the 22C11-HS.  
Circumvention: It is recommended not to use SELECT H if using a 22C11-HS Controllers or in a mux'd system configuration.

MXF Octopus ports will not give a DTR indication to a modem. Therefore they will not support a remote terminal. Ports 1 and 2 are OK.  
Circumvention: Use the first 2 MXF ports for remote terminals or use MXE boards for remotes.

Some TC functions which run correctly on the MXE may fail with the MXF. Certain GIO commands used to 'send control vector' may hang or result in error.  
Circumvention: Use the MXE board to handle these cases.

If RESET is keyed during a GIO/005 command to an MXF port, intermittently subsequent GIO commands will no longer execute or will hang the port. Must reboot to correct. Problem is more persistent with ports 2-16.  
Circumvention: If this issue is a problem use the MXE board for this purpose.

The PRINT AT command does not position properly with the MXF in some cases if a HEX(0A) is part of the command.  
Circumvention: Remove the HEX(0A) or change the line given in the PRINT AT command.

If using 2 22C11-HS Controllers, the 2nd 22C11-HS always fails the 'System Interface Card Test' but only on the first pass.  
Circumvention: Not necessary if aware of problem. On line tests are recommended for proper testing.

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## CHAPTER 5 - MEDIA CONTENTS

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### OVERVIEW

This chapter describes the contents of this release of the Wang Multiuser BASIC-2/Turbo Operating System.

### MEDIA CONTENTS OF RELEASE 1.30.01

This section describes the diskettes included in the Wang Multiuser BASIC-2/Turbo Operating System, Release 1.30.01.

Part Number	Number of Diskettes	Comments
291-1001-C	4	3 360K & 1 1.2M 5 1/4-inch Double-Sided Double-Density 2275/DS diskettes
which includes:		
731-8026-C	Disk 1 of 3	Boot files only
731-8027-C	Disk 2 of 3	@GENPART, drivers and standard utilities
731-8028-C	Disk 3 of 3	Disk and DOS utilities
734-8446-C	Disk 1 of 1	Complete 1.30.01 O/S on 1.2M

The following 77 files are included with Release 1.30.01:

FileName	Type	Disk #	Function
.STARTD	Data	2	System menu support
* @.BACKUP	Program	3	Backup Utilities Menu
* @.DISK	Program	3	Disk Management Utilities Menu
* @.RESTOR	Program	3	Restore Utilities Menu
@@	Data	1	Initial O/S boot file
@2236MXF <sup>a</sup>	Data	1	MXF Terminal Controller microcode
@22C11HS <sup>a</sup>	Data	1	High Speed Printer/Disk Cntl'r microcode
@22C11SS <sup>a</sup>	Data	1	SCSI Controller microcode
@BACKUP	Program	2	BACKUP utility
@BOOT	Program	1	Menu for bootstrap
@CLOC <sup>a</sup>	Program	2	Initialize date and time
@DATE	Data	2	Date file
@DG2	Program	1	Menu for system diagnostics
@DM50/V0	Data	2	Printer driver
@DOS	Program	3	DOS command processor emulation
@DOS.HLP	Data	3	DOS help screen data
@DOSCOPY	Program	3	DOS copy command emulation
@DOSCYCS	Program	3	Copy DOS to/from 2200
@DOSDCPY	Program	3	DOS disk copy
@DOSDEL	Program	3	DOS file delete
@DOSDIRP	Program	3	DOS dir command emulation
@DOSDIRW	Program	3	DOS dir command in widescreen format
@DOSEXIT	Program	3	Exit DOS
@DOSFORM <sup>a</sup>	Program	3	DOS format command emulation
@DOSHELP	Program	3	DOS help screen display program
@DOSREN	Program	3	DOS rename command emulation
@DOSSET	Program	3	DOS setup program

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## CHAPTER 6 - INSTALLATION

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### OVERVIEW

This chapter describes how to install this release of the Wang Multiuser BASIC-2/Turbo Operating System. There are several easy ways to install this new release either manually file by file or by using the utilities supplied with the operating system. In this section we will cover how to install this release including all utilities using the System Install Utility or just selected Operating System files using the Move File Utility.

### INSTALLATION PROCEDURE

#### System Install Utility

The 'System Install' Utility allows you to move all the latest operating system files and utilities from the 3 360K diskettes or the 1 1.2M included with this release to your system boot disk. The 'Install' program included with this release has been customized specifically for this release. Earlier versions will not move all files and may be unable to locate others. A listing of the files in this release along with a brief description is given in Chapter 5, Media Contents. From that list the following 3 files will not be copied if they currently reside on the output disk:

.STARTD	datafile	system menu support
START	program	used to call system utility menu
@SYSFILE	datafile	MVP configuration file

By not updating these 3 files your program start up, (LOAD RUN), will remain the same and your current system configuration as well as any additional configurations saved remain intact. One change to note. If your system currently boots automatically to a main menu or date screen, after the update it will now stop with the partition generation program screen. To complete the boot proceed as follows:

key SF'15	to load your last configuration used
key Y Return	to accept & execute the configuration
key Return	to accept the standard password

This should return you to your standard boot up screen. To reinstitute the auto boot process follow these steps once any current programs running on the terminal being used are completed:

key Shift/RESET	to clear screen
key CLEAR Return	clear memory for this terminal
LOAD DCT/Dxx,"@GENPART"	loads partition generation prog
key 100, then hit the EDIT key, then SF'15	displays line 100 on the screen

should read: 100 GOTO 1150: REM % Delete this GOTO for AUTO EXEC

if correct: use left arrow or SF'13 to move cursor to 1st G after 100

key INSERT or SF'10 4 times	creates a space
key in REM Return	negates the GOTO
RESAVE DCT/Dxx,"@GENPART"	saves change on disk
key CLEAR Return	clear memory again

Reload your system programs to return to normal operation.

	@DOSSTRT	Program	3	DOS start program
	@DOSTYLP	Program	3	DOS file to printer via type command
	@DOSTYPE	Program	3	DOS type command emulation
*	@DOSUTIL	Data	3	DOS utility names data file
	@DOSCfg	Data	3	DOS disk related data
	@DOSfmt1	Data	3	Data file for DOS format
	@DOSfmt2	Data	3	Data file for DOS format
	@DSAPPLY	Program	3	Apply hard disk config for DS w/ R4 prom
	@DSCFIG <sup>a</sup>	Program	3	DS configuration program
	@DSCFIGP	Program	3	DS disk protect program
	@DSTAPEB <sup>a</sup>	Program	3	DS tape backup
	@DSTAPER	Program	3	DS tape restore
	@FAST-HS <sup>a</sup>	Data	2	Backup of standard @22C11HS microcode
	@FORMAT <sup>a</sup>	Program	2	Format disk platter
	@GEN.386	Program	2	Memory size for 386 CPUs
	@GENPART <sup>a</sup>	Program	2	Partition Generator
	@HITRATE	Program	3	DS Cache hit rate program
*	@HQ300V0	Data	2	Printer driver for HQ200/HQ300
	@INSTALL <sup>a</sup>	Program	2	System install
	@LASRJV1	Data	2	Printer driver for Laserjet printer
	@MENU	Program	2	System menu program
	@MODSYSF	Program	2	Convert system configuration file
	@MOVE1	Program	2	Overlay for @MOVEFIL and @INSTALL
	@MOVEFIL <sup>a</sup>	Program	2	Move file
	@MRTIAN	Program	2	Game
	@MVP <sup>a</sup>	Data	1	Operating System microcode
	@MXE0	Data	1	MXE Terminal Controller microcode
	@PM010V2	Data	2	Printer driver
	@PM016V3	Data	2	Printer driver
	@PM017V3	Data	2	Printer driver
	@PM018V3	Data	2	Printer driver
	@PM060V0	Data	2	Printer driver
	@PSTAT <sup>a</sup>	Program	2	Partition status utility
	@RAMDISK	Program	3	Manage DS RAM disk size
	@RECOVER	Program	2	Recover from backup
*	@SCSICFG	Program	3	SCSI configuration program
*	@SCTAPEB	Program	3	SCSI tape backup
*	@SCTAPER	Program	3	SCSI tape restore
	@SLOW-HS	Data	2	@22C11HS microcode for use with Phoenix
	@SYSFILE <sup>a</sup>	Data	2	MVP configuration file
	@SYSMPB <sup>a</sup>	Program	2	Menu for System Utilities
	@TO.CRE0	Program	2	Load or create a reference file
	@TO.CREF <sup>a</sup>	Program	2	Create reference file
	@TO.DISK	Program	2	Copy to disk
	@TO.SUBS	Program	2	Overlay for @TO.DISK/IMAGE
	@TOIMAGE	Program	2	Copy to disk image
*	@VERCPUB	Program	3	Verify CPU type for SCSI backup
*	@VERCPUC	Program	3	Verify CPU type for SCSI config program
*	@VERCPUR	Program	3	Verify CPU type for SCSI restore
	START	Program	2	Calls System Utilities menu

\* These files have been added since the last general release of the BASIC-2/Turbo Operating System, version 1.10.

<sup>a</sup> These files have been modified since the last general release of the BASIC-2/Turbo Operating System, version 1.10.

To run the System Install utility use the following steps:

- 1) Make a full backup of your system disk where the O/S resides.
  - 2) Insure all processes on the terminal to be used are completed:
  - 3) Key: Shift/Reset to clear the screen.
  - 4) Type in: SELECT DISK Dxx Return xx will be 10, 20, or 30, the address of your diskette drive.
  - 5) If using a 1.2M drive insert disk 4 or otherwise use diskette 2 of 3 of the release 1.30.01 Operating System.
  - 6) Key: LOAD RUN Return loads the System Utilities menu
  - 7) Use the Space Bar key to highlight 'System Install'.
  - 8) Key: RUN displays Input address screen
  - 9) Input address = D10  
Enter: D10, D20 or D30 Return usually same as step 4
  - 10) (with 360K diskettes only) Insert diskette 1 of 3 in Input Drive selected in step 9. Remove diskette 2 of 3 if same drive.
  - 11) Output address = D11  
Enter: Dxx Return enter address where O/S resides, usually D11, D21, or D31
  - 12) Input disk contains CS/Turbo O/S. Install Y/N?  
Enter: Y Return yes to install if indicates Turbo  
Begins process of moving new files to system disk.
- \*Skip to step 17 if using the 1.2M Disk 4. Use 13-16 with 360K disks.\*
- 13) When requested remove diskette 1 of 3 and insert diskette 2 of 3 in the Input drive.
  - 14) Key: Return to continue install process
  - 15) When requested remove disk 2 and insert disk 3 in the Input drive.
  - 16) Key: Return to complete the install process
- 17) 'Completed Software Installation.' will display when done.  
Reboot system to load the new operating system.

If you have questions on upgrading your operating system or the preceding procedure, contact your system's programmer or the Wang Regional Support Center at telephone number 1-800-247-9264.

## Move File Utility

The 'Move File' Utility allows you to move all or selected files from 1 disk address to another with the option of overwriting if desired. For our purposes we will limit the discussion to just the updating of the operating system microcode files, '@MVP', '@2236MXF', '@22C11HS' and '@22C11SS'. To update other selected files from the list in chapter 5 of this document, use this same utility or the 'Moving a Selected List of Files' utility. For additional information on these 2 utilities, both included with this software, refer to the Basic-2 Utilities Reference Manual, part number 715-3949A.

To update just the operating system files, '@MVP', '@2236MXF', '@22C11HS', and '@22C11SS' using the 'Move File' utility, follow these steps:

- 1) Make a full backup of your system disk where the O/S resides.

- 2) Insure all processes on the terminal to be used are completed:
- 3) Key: Shift/Reset to clear the screen.
- 4) Type in: SELECT DISK Dxx Return xx will be 10, 20, or 30, the address of your diskette drive.
- 5) Insert disk 4 if using a 1.2M drive, otherwise diskette 2 of 3 of the release 1.30.01 Operating System.
- 6) Key: LOAD RUN Return loads the System Utilities menu
- 7) Use the Space Bar key to highlight 'Move File'.
- 8) Key: RUN displays Input address screen
- 9) Input address: D11  
Enter: D10, D20 or D30 Return usually same as step 4
- 10) Input platter type: W  
Enter: Return W indicates Wang type disk
- 11) (with 360K diskettes only) Insert diskette 1 of 3 in Input Drive selected in step 9. Remove diskette 2 of 3 if same drive.
- 12) Output address: D10  
Enter: Dxx Return xx is the address where the O/S resides, usually D11, D21, or D31
- 13) Output platter type: W  
Enter: Return W indicates Wang type disk
- 14) Do you wish to move all active files? N  
Enter: Return N to selectively enter files
- 15) Input file name: @MXE0  
key in: @MVP Return to move the operating system
- 16) Extra Sectors: 00000  
key: Return to accept default
- \*17) Output file name: @MVP  
key: Return to accept default or enter new name for output file (see \* below)
- 18) If a new file name was given, the file is now copied. Otherwise, if the file name exists, will ask if you want to overwrite?  
Enter: Y Return to update operating system
- 19) Once the 'move' is completed the screen will prompt for another file.
- Repeat steps 15-17 for @2236MXF, @22C11HS, and @22C11SS. Do not rename.
- Key: Shift/Reset to end Move and clear screen
- 20) Type in: SELECT DISK Dxx xx is address where your system's programs reside
- 21) Key: LOAD RUN standard return to main menu

To use the new O/S once this procedure has completed, reboot the system.

\* The Operating System can be renamed something other than @MVP on the output disk. This would be required to have more than 1 O/S file at the same address. If this is necessary, the file name is restricted to 4 characters total and must start with @. An example would be '@TUR'. The file @BOOT must then be manually updated to include an entry with the new file name. The @BOOT file is used to provide a menu with the O/S choices and diagnostics which normally displays during the boot procedure.

**WARNING** The file @BOOT does have size restrictions that prevent the system from successfully booting if too many lines are added.

If you have questions on upgrading your O/S, contact your programmer or the Wang Regional Support Center at telephone number 1-800-247-9264.

October 21, 1993  
Wang Laboratories, Inc.  
1 Industrial Avenue  
Lowell, MA 01851 USA

Release Notes  
for  
CS/386 TURBO Maintenance Release 1.30.00  
for beta test

This Turbo Maintenance Release, 1.30.00, represents the latest Turbo Operating System software now available for beta test. The @MVP microcode file has been modified to correct a number of unique problems. The release number was bumped from 1.18 to 1.29 and then to 1.30 to prevent any confusion with existing test, beta, and older pre-releases of the Turbo Operating Systems.

- Note 1: Use of maintenance release 1.18 and above requires new prompts on the CPU board at locations L50 and L64, and on all Turbo Controllers (MXF, 22C11-HS, and 22C11-SCSI) at locations L7 and L14 of the 210-9579 I/O Processor. These prompts are only available from R&D and/or Product Support at this time.
- Note 2: If upgrading from Turbo General Release 1.10 or Turbo Maintenance Release 1.15 and using Three Byte Addressing, a compatibility problem exists with O/S 1.18 and higher. A bug exists on 1.1 and 1.15 which moves the index up 1 sector but only on a 3 byte address. A 3 byte address can easily be identified on a LIST of a disk by the & sign immediately following the the right most digit of the 'INDEX SECTORS =' entry. On 1.1 or 1.15, any file entries that are placed in the last sector of the index would actually be in the first sector of the first file of the catalog. If the first file was a program, this problem could be harmless because the first sector of a program contains just the filename and the index can work around it. If the first file following the index is a data file, a data integrity problem could exist. Writing to that data file could overwrite index entries in the last sector of the index. Adding files to that address could result in an entry in the last sector of the index which would overwrite data in that file. Additionally, although filenames located in the last sector can be loaded if programs or read or written to if data, they will not show up on a LIST.

On 1.18 and higher, 3 Byte indices have been corrected to start at sector 0. This results in an inability of the O/S to locate a file explicitly by name if on a 3 byte address created by 1.1 or 1.15. A D82, 'File not Found', is issued even though the file may show on a standard LIST. This is also the case if the 3 byte address was created on 1.18 or higher and the system was downgraded to 1.1 or 1.15. Explicit reference to a filename will fail because in each case the O/S is looking 1 sector off and not finding the file. Special care will need to be taken when upgrading to 1.30 from 1.1 or 1.15 to insure no files are lost. If a MOVE disk command is used with 1.18 or above to MOVE a 3 byte address created with 1.1 or 1.15, filenames in the last sector of the index (actually last sector + 1) will not be moved. If you are using 3 byte addressing on 1.15 or 1.1 please contact Product Support before upgrading to insure this problem is properly addressed. Failure to fully comprehend the situation could result in a number of files being lost. Release 1.30 is the minimum release recommended for 3 Byte Addressing. It includes fixes for a number of 3 byte problems. See also 'Clarification' for additional related information.



The following list highlights in brief the problems fixed and modifications made to the operating system since the last General Release of the Operating System, release 1.10:

- corrects problem with assigning Printer Drivers to address 204 for terminals beyond the first 16. (1.16)
- fixes problem where a MXE TC port might not show up in the Device Table as well as problems hogging those TC addresses. (1.16)
- corrects problem where with 3 byte addressing selected there could be a problem saving multiple data files with DATA SAVE DC OPEN. (1.16)
- corrects problem where calculations greater than E99 could give an incorrect answer, should give an error. (1.17)
- resolves the terminal hang issue associated with the LINPUT and KEYIN commands where the terminal would intermittently not respond to a keyboard entry. (1.18)
- corrects a problem where printer drivers would not show up for any controller following an MXE or MXD. (1.18)
- corrects a problem where if using address 405 to PRINT to the screen, linefeeds would not be suppressed. (1.18)
- allows the SCSI floppy to read a 256 byte 360K or 1.2M 2200 diskette. (1.18)
- corrects problem where a rewind or retension of SCSI tape would fail with a virgin tape. (1.18)
- corrects problem where if a REM% was followed by a hex 7D or hex 7E character, all subsequent commands on the same line would be ignored. (1.18Q)
- corrects an intermittent hang which could occur when mux'ing 2 CPUs to 2 disk drives if 2 or more partitions from each CPU where hogging both mux'd units. (1.18Q)
- if a program was enlarged to require an additional sector and resaved within a program, the RESAVE would appear to successfully execute but the saved file would be blank. (1.29.00)
- if in immediate mode a string of 87 1s were added in a PRINT command, the O/S would blow and the system would need to be rebooted. Other long string combinations could also cause problems. (1.29.00)
- SELECT NEW would default to OLD after a CLEAR or LOADRUN. Now, the only way to change the NEW/OLD default is with the SELECT command. SELECT OLD is still the default on power up. (1.29.00)
- a line with a DEFFN' statement may not execute any command following it on the same line if in a Global with a higher partition #. (1.29.00)
- the RENAME command could corrupt the disk if renaming a program on a 3 byte address. (1.30.00)
- the LOADDAT and SAVEDAT commands would not work on a 3 byte address beyond 65534. (1.30.00)
- if an address with more than 65534 sectors had been scratched as a 2 byte catalog with less than 65535 sectors, a MOVEEND command beyond 65535 could be executed without an error and could corrupt the index. Now it correctly returns an illegal value for any number beyond 65534. (1.30.00)
- if a COPY command resulted in an error, the address involved could be locked out to all other users unless that same partition issues a RESET or reaccesses that address before another partition does. (1.30.00)
- If an address with 65535 sectors or more was scratched for 65535 sectors, the End Catalog Area would show an illegal address. To set the Catalog End to 65535, a 3 byte address must be created. (1.30.00)
- the MOVE command would cause the Catalog End to be set to the Current End. It now correctly uses the Catalog End from the input address unless otherwise specified.

## Enhancements:

The MOVE command has been enhanced to dynamically allow the creation of a 3 byte index or a 2 byte index on the output disk regardless of the index type on the input disk. The syntax for this is as follows:

MOVET/Dxx,TO&T/Dxx	creates a 3 byte index on the output disk
MOVET/Dxx,TO'T/Dxx	creates a 2 byte Type 1 index on the output

After the 2nd address, the index size (LS = #) and catalog size (END = #) can optionally be given by using a comma after the last address and after the index size if both options are used. If not specified the MOVE command will create the same type index on the output disk as existed on the input disk. As previously defined, specifying the index size or catalog end without the ' or & will cause a default to a type 1 index. Without the & an index size greater than 256 or a catalog end greater than 65534 will cause an error.

## Clarification:

SELECT 3 ON/OFF - is used in conjunction with 3 byte addressing, an optional Turbo feature with the new DS or CS-D R4 prom. Three Byte Addressing provides 1 additional byte for each address entry when creating a disk catalog. This enables the user to create a disk catalog which can extend beyond 65534 sectors and/or an index greater than 256 sectors. Because alphavariabls can be used within certain disk commands to specify the sector address, the system must now be able to identify whether the alphavariabls is 2 or 3 bytes long. This is the main purpose of the SELECT 3 command. SELECT 3 must be on to read a 3 byte address when using an alphavariabls for a sector address in a DATALOAD or DATASAVE command. Subsequently, a SELECT 3 OFF command must be issued from the same partition if switching back to a 2 byte address in an alphavariabls. Failure to set SELECT 3 ON and OFF appropriately when using alphavariabls for sector addresses will likely corrupt your disk. Additionally, unless explicitly identified as a 3 byte command (use of & in a SCRATCH or MOVE), SELECT 3 is required for the system to accept an address beyond sector 65534 in a disk command.

## Known anomalies:

### PERFORMANCE:

1. CPU intensive processes can be negatively impacted when upgrading from Turbo O/S 1.1 to O/S 1.18 or higher when running at the same time as certain disk processes. CPU intensive processes seem to have priority on 1.1 where disk I/O seems to have priority on 1.18 and above.

### 22C11-HS HIGH SPEED PRINTER PORT:

2. The High Speed printer buffer has a 1 character overflow. If the data string sent to the printer exceeds the remaining space in the buffer a hang occurs.

3. A special machine code command to check printer ready can cause a problem with the high-speed printer port on the 22C11-HS. This program works perfectly with the old bus indicating READY or NOT READY if you deselect the printer. On the 22C11-HS, READY is usually indicated even without a printer connected. If the command is looped on while the printer is deselected, within approximately 5-10 minutes the system is hung until the printer is selected.
4. A GIO sequence which works with the 386 and on the old bus to determine if the printer is READY or NOT READY if used with the 22C11-HS can cause the disk port on that board to hang or severely slow down.
5. After a warm boot, \$INIT"SYSTEM", if using a printer with a buffer such as the PM017 on the 22C11-HS, some garbage characters will print out preceding the first printed data.

#### MUXing DISKS:

6. Intermittent I90 errors occur if using the 22C11-HS Mux port. The more terminals controllers in the Turbo the more likely the problem.
7. If using the 22C11-HS Mux port to boot, all other CPUs using the common 2275MUX will be locked out of all access through that controller until @GENPART is loaded.
8. If a Turbo housing a 2275MUX is powered off and on, all access by secondary CPUs through the 2275MUX will hang until either RESET is keyed on the CPU attempting access or the Turbo accesses that address.
9. If boot diagnostics are executed on the Turbo through a 22C80, all disk access by other CPUs through the common 2275MUX will hang until the diagnostics are exited.

#### DISK RELATED:

10. VERIFY does not work properly with the 2275 if verifying just sector 0 on the 22C11-HS.

#### SPECIFIC COMMAND RELATED:

11. The INPUT CURSOR command may intermittently hang.
12. LISTS & LISTSD do not work correctly to a system or terminal printer. If the printer requires a printer driver it will not linefeed. If the printout should take more than 1 screen, the 2nd screen does not occur.

#### SELECT H:

13. If 2 partitions are constantly accessing the same DS, only 1 with SELECT H ON, the partition using SELECT H ON will hang until the 2nd partition finishes if using the 22C11-HS.

#### MXF:

14. MXF Octopus ports will not give a DTR indication to a modem. Therefore they will not support a remote terminal. Ports 1 and 2 are OK.
15. If RESET is keyed during a GIO/005 command to an MXF port, intermittently subsequent GIO commands will no longer execute or will hang the port. Must reboot to correct. Problem is more persistent with ports 2-16.
16. The PRINT AT command does not position properly with the MXF in some cases.

THREE BYTE ADDRESSING:

17. COPY command will not work with an address of 65535 or higher even with SELECT 3 ON.

OTHER:

18. If using the Make a Reference List of File Names Utility (Moving a Selected List of Files on newer releases) and after selecting your files, option 4 is used to save the list in a program file, an error A02 occurs on line 30, which is a COM statement.

19. If using 2 22C11-HS Controllers, the 2nd 22C11-HS always fails the 'System Interface Card Test on the first pass only.

Included with the enclosed software is a TEST SITE Agreement to be signed and returned to Wang. Please notify me of any problems which may occur or for any questions.

Sincerely,

Mike Bahia  
2200 Product Support  
M/S 019-690  
Tel: 508-656-0256

0116D

Turbo O/S 1.30  
Bug Listing

October 7, 1993

PHASE 1 Bugs:

PERFORMANCE:

\*\*\* 1. (29) M41/8916

CPU intensive processes can be severely impacted when upgrading from Turbo O/S 1.1 to O/S 1.18 when running at the same time as certain disk processes. This problem was duplicated as follows: Partition 16 terminals and 16 partitions on 1 MXF with 100K memory. Setup 4 terminals to run the 2200 Instruction Exerciser test, "INSTROC", and 4 running "CPUDEMO1". With just these CPU intensive tasks there is not too much difference:

	1.1	1.18
CPU Benchmark	14-19 seconds/pass	17-20 seconds/pass
Instruction Test	7 min 20 sec/pass approx	8 min 40 sec/pass
Rerun the same test w/ 1 additional W/S running the Disk Benchmark, "BMDIO1P1":		

	1.1	1.18
CPU Benchmark	16-19 seconds	39-66 seconds/pass
Instruction Test	8 min 27 seconds/pass	21 min 15 seconds/pass
Disk Benchmark	3 min 17 seconds/pass	24-36 seconds/pass
(no disk test) <u>TESTING with 1.30 using OLD BUS only.</u> (disk test running)		
CPU Benchmark	172-186 seconds	164-173 seconds/pass
Instruction Test	9 min 36 seconds/pass	8 min 37 seconds/pass

For disk I/O the CS/D DPU Board was used with an internal 140 Meg drive. As can be seen CPU intensive processes seem to have priority on 1.1 where disk I/O seems to have priority on 1.18. The best solution may be if this balance could be set by the customer to best meet their specific needs. Otherwise a better balance is needed. Did testing using old bus with 1.30 and as can be seen in the results above, the old bus is not affected. CRITICAL

DISK RELATED:

- \* 2. (17) M2/17601 (similar to 4 & 11) ONLY  
VERIFY does not work properly with the 2275 on the 22C11-HS disk controller. Run the following program:

VERIFY/Dxx,(0,0)A0: PRINT A0  
A0 should = 0. It does not. P2

\*\* 3. M2/21155

The COPY command will not accept a sector address greater than 65534 whether SELECT 3 is ON or OFF. Returns an 'Illegal Value' error. With SELECT 3 ON this should not be an 'Illegal Value' and obviously if the address given is less than the last sector available to that address, it should successfully execute. To duplicate execute the following command to the appropriate 3 byte address:

COPYT/D10,(0,1000)TOT/Dxx,(70000)  
P2

4.

A 1.2M Floppy if write-protected returns an I93 error on a write. Should return I95, Platter Protected. Same problem with CS/386. P3

VERIFY WILL NOT ACCEPT ADDRESS > 65534. GET ERROR P34 ILLEGAL VALUE.

WHEN DID VERIFY/D3F (0,65534) TO SCSI ADDR W/ 99999 SECTORS RETURNED ERROR IN 100001. THIS MAY BE EXCLUSIVE TO SCS. OR SCSI & HS CONTROLLER.

FIXED  
w/ 1.30.01

FIXED  
w/ 1.30.01

SPECIFIC COMMAND RELATED:

MXF

5. (21) M2/17455

The INPUT CURSOR command intermittently hangs. Run following program from a 2536DW terminal. This command is not valid on older terminals.

10 DIMA\$3

20 PRINTHEX(0306):A=0

30 PRINT AT (5,1);HEX(02 05 0F)

40 INPUT CURSOR A\$:A=A+1:PRINT AT (10,12);A:GOTO30

Program will intermittently hang within 5 minutes. P2

6. (22) M2/17453

LISTS & LISTSD do not work correctly to a system or terminal printer. If printer requires a printer driver it will not linefeed. If printout should take more than 1 screen, 2nd screen does not occur. To duplicate LOAD @GENPART and do a SELECT PRINT 215 or 204 using a PM017 printer with driver installed. Do a LISTS or LISTSD.

No problem on 386. P3

11/19/93 MXF TERM 204 CPMD10V2 LISTS - NO LINEFEED BUT DOES DO FOLLOWING PAGE (MXE SAME)  
 " " " " LISTD - DOES FULL LISTING (MXE SAME)  
 DS DATA PORT 215 CPMD17 SAME AS ABOVE  
 22C11-H5 SAME AS ABOVE?

MXF:

\* 7. (27) M2/17600

The PRINT AT command does not position properly with the MXF in some cases. Run the following examples on the MXF then on the MXE to compare:

Example 1: 10PRINT AT (21,0,);HEX(0A 0A);"TEST" (fails on lines 5 & up)

Example 2: PRINT AT(10,0,);HEX(0A);"TEST" (fails on line 10 only)

In either example, if the HEX(0A) or the last comma within ( ) is removed the problem will likely not occur. P2

OTHER:

8. (47)

~~If using the Make a Reference List of File Names Utility (Moving a Selected List of Files on newer releases) and after selecting your files, option 4 is used to save the list in a program file, an error A02 occurs on line 30, which is a COM statement. No problem on 386 or VLSI. P2~~

1/20/94 CS/386 130 TRIED TO MOVE ALL FILES FROM DES DISK UTILITIES TO 340. ERROR A02 LINE 910 DIM D0A80  
 OK 10014 PARTITION TOO SMALL. END = 99 WHEN: A02 (NOT ENOUGH MEM). INCREASE MEM TO 200K & OK

9. M2/21159

Cannot Halt/Step through a GIO command. When the systems executes a GIO a number of following statements will also execute.

W#(E)4  
 OK w/ PART ENLARGED TO 200K

## PHASE 2 Bugs:

## 22C11-HS HIGH SPEED PRINTER PORT:

## \*\*\* 1. (2) M2/17591

The High Speed printer buffer has a 1 character overflow. If the data string sent to the printer exceeds the remaining space in the buffer a hang occurs. To duplicate run the following using the HS or SCSI printer port:

```
10 $CLEAR215
20 $IFOFF/215,100: SELECT PRINT 215
30 PRINT "A";      (this works) or 30 PRINT "ABCDE";      (this hangs)
40 B=B+1: SELECT PRINT 005      40 B=B+5: SELECT PRINT 005
50 PRINT AT (2,40);"CHARACTERS SENT TO BUFFER ";B
60 GOTO 20
100 SELECT PRINT 005: PRINT "PRINTER NOT READY": GOTO 20
    Request R&D set buffer overflow to the printer default, 80 chars, but
    have it change if the line length is changed. SCSI has same problem,
    #30. CRITICAL
```

## \*\*\* 2. (3) M2/17591

The following program checks for printer Ready and works on the old bus but not on the High Speed port.

```
1 DIM C9$(16)
5 C9$="215"
10 IF ON/215,20:ERROR GOTO 100
20 $OPEN 100,/215:$IF OFF/215,100: $GIOREADPRINTERSTATUS/215,(0100 0201
1212 4000 4000 4000 4000, C9$(2)): IF STR(C9$(2),8,1)=HEX(10)THEN E=1:
ELSE E=0: PRINT "READY": GOTO 200
100 E=-2: PRINT"NOT READY": GOTO 10
200 GOTO 10
```

This program works perfectly with the old bus indicating READY or NOT READY if you deselect the printer. On either the 22C11-HS or -SCSI READY is usually indicated even with no printer connected. If the program is allowed to run while the printer is deselected on either the -HS or -SCSI, within approximately 5-10 minutes the system is hung until the printer is selected. However, when the -HS hangs, NOT READY has printed one time. Never see NOT READY with the -SCSI.  
CRITICAL

## \*\*\* 3. (4) M2/17689

A GIO sequence which works with the 386 and on the old bus to determine if the printer is READY or NOT READY if used with the 22C11-HS can cause the disk port on that board to hang or severely slow down. My configuration had a DS at 310 and a PM010 at 215 of the same 22C11-HS.

On the disk port run the following:

```
10 DIM A$(16)
20 X=INT(65023*RND(1))
30 PRINTX
40 DATALOADBAT/D11,(X,L)A$( )
50 GOTO 20
```

On 2nd partition run the following:

```
10 Q$=HEX(15): $GIO(7310 0201 0300 1222
4000 4000 4000,Q$)
20 HEXPRINT STR(Q$,8,1)
30 IF STR(Q$,8,1)=HEX(00)THEN 100
40 PRINT"PRINTER NOT READY"
50 GOTO 10
100 PRINT "PRINTER READY"
110 GOTO 10
```

If the printer is NOT READY, NOT READY is printed on the screen but disk performance slows way down. If the printer is READY and the program left running, within a few minutes the printout goes NOT READY and disk access on that board is hung. To clear the hang

without powering off: a. RESET any workstation accessing that disk.  
 b. \$CLEAR215 c. Power printer off and on. d. Send something to the  
 print buffer. Disk should be ok. With the -SCSI printer port you  
 always get READY, but disk performance is not affected. CRITICAL

4. (5)

The 22C11-HS printer port will not pass the following data: HEX(0000  
 FFFF 0000 FFFF). Do not know the particulars of this problem. Could  
 not duplicate on 1.18. Related to VFU code. Reported by K&R Custom  
 S/W. K&R to retest on 1.18 and provide details if still failing.  
 P2

5. (6) M2/17454

After a warm boot, \$INIT"SYSTEM", if using a printer with a buffer  
 (PM017) on the 22C11-HS, will get a few garbage characters when first  
 try to print. Appears the printer's buffer does not get cleared when  
 using the 22C11-HS. P3

22C11-HS DISK PORT:

\* 6. (49) M8/20512

External DS disk to tape backup is much slower with the 22C11-HS than  
 with an old style disk controller.

#2. 2275 BUL

MUXing DISKS:

\*\*\* 7. M2/17594

Intermittent I90 errors occur if using the 22C11-HS Mux port. The  
 more terminals controllers in the Turbo the more likely the problem.  
 Install 2 MXFs & 2 MXEs in a Turbo & use the 22C11-HS Mux port to  
 talk to a DS through a 2275MUX in a 2nd CPU. If try to boot through  
 the HS Mux port will likely get I90 or hang. If system boots run the  
 following program:

```
10 DIM A$(16)
20 X=INT(RND(1)*65000)
30 DATA LOADBAT/Dxx,(X,L)A$()
40 Y=INT (RND(1)*65000)
50 DATA SAVEBAT/Dxx,(Y,L)A$():GOTO 20
```

CRITICAL

8. (9)

If using the 22C11-HS Mux port during a boot, the 2275MUX becomes  
 locked out from all other CPU's until the booting Turbo gets @GENPART  
 loaded. All other CPU's will hang if try to access disk connected to  
 2275MUX. P2

9. (11) M2/17452

If power off Turbo with 2275MUX installed, 2275MUX does not get  
 properly cleared with power on. Other CPUs will hang until a RESET  
 is keyed from that CPU or until the Turbo housing the 2275MUX  
 accesses the disk connected to it. P2

10. M2/17527

If run customer level diagnostics from screen where O/S or  
 diagnostics is selected during boot using a 22C80 (210-7715) to a  
 2275MUX, other users on other CPU's using the same 2275MUX are locked  
 out. P3



## PHASE 3 Bugs:

## SELECT H:

## \*\*\* 1. (25) P2/17451

If 2 partitions are constantly accessing same DS, 1 with SELECT H ON, the partition using SELECT H ON will hang until the 2nd partition finishes. Must use 22C11-HS. Run following programs:

partition 1

```
10 SELECT H ON: $OPEN/D11: DIM A$(16): X=INT(RND(1)*30000):
```

```
DATALOADBAT/D11,(X,L)A$():PRINT X;:$CLOSE:GOTO 10
```

partition 2

```
10 DIM A$(16): X=INT(RND(1)*30000):DATALOADBAT/D12,(X,L)A$(): PRINT X;: GOTO 10
```

P1

## MXF:

## \* 2. (26)

MXF Octopus ports will not give a DTR indication to a modem. Therefore they will not support a remote terminal. Ports 1 and 2 are OK. P1

## \* 3. (46)

If RESET is keyed during a GIO/005 command to an MXF port, intermittently subsequent GIO commands will no longer execute or will hang the port. Must reboot to correct. Problem is more persistent with ports 2-16. Use the following program to duplicate:

```
10 DIM Q$104,I$(24)80: PRINT HEX(03 06)
```

```
20 Q$=ALL(09): STR(q$,1,24)=ALL(0A): STR(Q$,25,1)=HEX(00)
```

```
30 FOR A=1 TO 24: I$(A)="This is a test line , please press
```

```
RESET": CONVERT A-1 TO STR(I$(A),27,2),(##): NEXT A
```

```
40 FOR A=1 TO 23: STR(I$(A),79,2)=HEX(0D 0A): NEXT A
```

```
50 P$=HEX(40 01 A2 00 1A 00 A2 00)
```

```
60 $GIO/005 (P$)Q$ 25,1 ;I$() (less than sign after Q$, grter than after 1)
```

```
70 GOTO 60
```

Run program & 1st time ok. Key RESET and run again and repeat until fails. P1

## 4. (28)

Need MXF TC functions to work. Should have the following functions: Terminal in TC or normal mode, 10 or 11 bit protocol, XON/XOFF flow control. P3

## OTHER:

## 5. (48)

If using 2 22C11-HS Controllers, the 2nd 22C11-HS always fails the 'System Interface Card Test on the first pass only. To duplicate install 2 22C11-HS Controllers using addr's 310 and 330. On boot select diags instead of O/S. First pass only of the 'System Interface Card Test' will fail. P3

## 6. (29a)

If booting from a MXE or MXD and SHIFT/RESET is keyed to bypass the boot diagnostics, you must release the SHIFT key and press it again to get RESET to work with 'Mount System Platter, Press Reset'. You do not have to release the SHIFT key with the MXF board.

P3

pg 1 ✓ - 1.2M - IP WRITE PROTECTED RETURN I93 ON FORMAT. SHOULD RETURN I95

— ILLEGAL SECTOR ADDRESSES SHOULD RETURN I98 (ILLEGAL SECTOR ADDRESS ON NO PLATON), NOT P34 (ILLEGAL VALUE)

MXF

INTERMITTENTLY IF IN IMMEDIATE MODE DOING PRINT +1+1 WITH ABOUT 65 TO 70 IS AND YOU CONTINUOUSLY DO EDIT/RECALL + 1 RETURN, A DOUBLE PLUS SIGN WILL OCCUR AFTER THE 45<sup>TH</sup> +1 & BRER S24 OCCURS.

OTABE PARTITIONS ON MXF MAY NEED TO BE ACTIVE.

HAD TROUBLE DUPLICATING W/ 4 TERMINALS RUNNING INSTRUCT EXERCISE ON DH.

GIVE OLD CONTROLLERS MORE TIME SLICE SO WON'T GO DOWN SYSTEM WHEN RUNNING TC W/ 22270 OR 28C OR MXB.

THING 2 MXB PORTS TIED TOGETHER (REGULAR TERM CABLE W/ TERM END)	
!AUTO	ON TC BOARD)
LOADRUN "TOOLS"	GEN 4 PART
MENU	3 TERMS
AUTOMENU	TERM 1,2,4
	LISTDT

pg 2 ✓ HALT/STEP BUG W/ G10. NEED TO TEST ON 1,29.00

MXF - CAN WE ENLARGE INPUT BUFFER FROM 256<sup>CHAR</sup> TO A LARGER SIZE TO HELP SPEED UP COMMUNICATIONS.

SOFT SIZE OF BUFFER W/ COMMUNICATION CONTROL VECTOR.

BLOCK SIZE > 1 K TO ACCEPT 1 K STANDARD SIZE PLUS CONTROL CHAR.

4K WOULD BE PERFECT.

SELECT 3

MUST BE ON IF USING ALPHAVARIABLES<sup>(MUST BE 3 BYTE)</sup> FOR SECTOR ADDRESSING W/ DATA LOAD/SAVE COMMANDS. MUST BE OFF IF USING 2 BYTE ALPHAVARIABLES WITH DATA LOAD/SAVE FOR 2 BYTE ADDRESS.

CS/386 Maintenance Release 1.30.00  
for beta test

This CS/386 Maintenance Release, 1.30.00, represents the latest CS/386 Operating System software now available for beta test. The @MVP microcode file has been modified to correct a number of unique problems. Release 1.30 follows releases 1.29.01 which was the first new update to the CS/386 O/S since 1.1z. The release numbers were bumped to 1.29.01 followed by 1.30.00 to prevent any confusion with existing test, beta, and older pre-releases of CS/386 Operating Systems. Maintenance Release 1.30.00 fixes the following bugs since 1.1z:

- If the O/S is pointing to an address in the variable stack ending in FF when either an external print command or access to RAM Disk, address 340, is to be executed, a hang could occur. (1.29.01)
- If a program is enlarged to require an additional sector and resaved within a program, the saved file may appear blank. (1.29.01)
- If a program saved in 'NEW' or 386 format is loaded into memory and contains a DEFFN for a SF key, hitting the defined key before executing the program could blow the O/S. (1.29.01)
- If in immediate mode a string of 87 ls are added in a PRINT command, the O/S will blow and the system will need to be rebooted. Other long string combinations could also cause problems. (1.29.02)
- SELECT NEW would default to OLD after a CLEAR or LOADRUN. Now, the only way to change the NEW/OLD default is with the SELECT command. SELECT OLD is still the default on power up. (1.29.02)

Anomalies:

- If SELECT H is used in a multi-CPU environment where more than 1 CPU is hogging an address in the same disk cabinet, intermittent hangs could result as well as erratic performance. It is recommended SELECT H not be used in a multi-CPU setup.

The aforementioned software is enclosed along with a TEST SITE Agreement to be signed and returned to Wang. Please notify me of any problems which may occur or for any questions.

Best regards,

---

Mike Bahia  
2200 Product Support  
508-656-0256

August 5, 1993

CS/386 Maintenance Release 1.29.01  
Pre-release Software

CS/386 Maintenance Release 1.29.01 is a pre-release to 1.30.00. It is the first new maintenance release since 1.1z. The release number has been bumped to 1.29.01 to prevent any confusion with existing test, beta, and older pre-releases of CS/386 Operating Systems. This release along with some subsequent changes and enhancements to the CS/386 will combine to become the next general release, 1.30.00. Maintenance Release 1.29.01 fixes the following bugs since 1.1z:

If the O/S is pointing to an address in the variable stack ending in FF when either an external print command or access to RAM Disk, address 340, is to be executed. a hang could occur.

If a program is enlarged to require an additional sector and resaved within a program the saved file may appear blank.

If a program saved in 'NEW' or 386 format is loaded into memory and contains a DEFFN for a SK key, hitting the defined key before executing the program could blow the O/S.

The aforementioned software is enclosed along with a TEST SITE Agreement to be signed and returned to Wang. Please notify me of any problems which may occur or for any questions.

Best regards,

---

Mike Bahia  
2200 Product Support  
508-656-0256

0085D

September 15, 1993  
Wang Laboratories, Inc.  
1 Industrial Avenue  
Lowell, MA 01851 USA

Release Notes  
for  
CS/386 TURBO Maintenance Release 1.29.00  
for beta test

This Turbo Maintenance Release, 1.29.00, represents the latest Turbo Operating System software now available for beta test. The @MVP microcode file has been modified to correct a number of unique problems. Release 1.29 follows release 1.18Q. The release number was bumped to 1.29.00 to prevent any confusion with existing test, beta, and older pre-releases of the Turbo Operating Systems.

The following list highlights in brief the problems fixed and modifications made to the operating system since the last General Release of the Operating System, release 1.10:

Note: Use of maintenance release 1.18 and above requires new prompts on the CPU board at locations L50 and L64, and on all Turbo Controllers (MXF, 22C11-HS, and 22C11-SCSI) at locations L7 and L14 of the 210-9579 I/O Processor. These prompts are only available from R&D and/or Product Support at this time.

- corrects problem with assigning Printer Drivers to address 204 for terminals beyond the first 16. (1.16)
- fixes problem where a MXE TC port might not show up in the Device Table as well as problems hogging those TC addresses. (1.16)
- corrects problem where with 3 byte addressing selected there could be a problem saving multiple data files with DATA SAVE DC OPEN. (1.16)
- corrects problem where calculations greater than E99 could give an incorrect answer, should give an error. (1.17)
- resolves the terminal hang issue associated with the LINPUT and KEYIN commands where the terminal would intermittently not respond to a keyboard entry. (1.18)
- corrects a problem where printer drivers would not show up for any controller following an MXE or MXD. (1.18)
- corrects a problem where if using address 405 to PRINT to the screen, linefeeds would not be suppressed. (1.18)
- allows the SCSI floppy to read a 256 byte 360K or 1.2M 2200 diskette. (1.18)
- corrects problem where a rewind or retension of SCSI tape would fail with a virgin tape. (1.18)
- corrects problem where if a REM% was followed by a hex 7D or hex 7E character, all subsequent commands on the same line would be ignored. (1.18Q)
- corrects an intermittent hang which could occur when mux'ing 2 CPUs to 2 disk drives if 2 or more partitions from each CPU where hogging both mux'd units. (1.18Q)
- if a program was enlarged to require an additional sector and resaved within a program, the saved file could have appeared blank. (1.29.00)
- if in immediate mode a string of 87 ls were added in a PRINT command, the O/S would blow and the system would need to be rebooted. Other long string combinations could also cause problems. (1.29.00)
- SELECT NEW would default to OLD after a CLEAR or LOADRUN. Now, the only way to change the NEW/OLD default is with the SELECT command. SELECT OLD is still the default on power up. (1.29.00)

- a line with a DEFFN' statement may not execute any command following it on the same line if in a background task. (1.29.00)

#### Known anomalies:

##### PERFORMANCE:

1. CPU intensive processes can be negatively impacted when upgrading from Turbo O/S 1.1 to O/S 1.18 or higher when running at the same time as certain disk processes. CPU intensive processes seem to have priority on 1.1 where disk I/O seems to have priority on 1.18 and above.

##### 22C11-HS HIGH SPEED PRINTER PORT:

2. The High Speed printer buffer has a 1 character overflow. If the data string sent to the printer exceeds the remaining space in the buffer a hang occurs.
3. A special machine code command to check printer ready can cause a problem with the high-speed printer port on the 22C11-HS. This program works perfectly with the old bus indicating READY or NOT READY if you deselect the printer. On the 22C11-HS, READY is usually indicated even with no printer connected. If the command is looped on while the printer is deselected within approximately 5-10 minutes the system is hung until the printer is selected.
4. A GIO sequence which works with the 386 and on the old bus to determine if the printer is READY or NOT READY if used with the 22C11-HS can cause the disk port on that board to hang or severely slow down.
5. After a warm boot, \$INIT"SYSTEM", if using a printer with a buffer such as the PM017 on the 22C11-HS, some garbage characters will print out preceding the first printed data.

##### MUXing DISKS:

6. Intermittent I90 errors occur if using the 22C11-HS Mux port. The more terminals controllers in the Turbo the more likely the problem.
7. If using the 22C11-HS Mux port to boot, all other CPUs using the common 2275MUX will be locked out of all access through that controller until @GENPART is loaded.
8. If a Turbo housing a 2275MUX is powered off and on, all access by secondary CPUs through the 2275MUX will hang until either RESET is keyed on the CPU attempting access or the Turbo accesses that address.
9. If boot diagnostics are executed on the Turbo through a 22C80, all disk access by other CPUs through the common 2275MUX will hang until the diagnostics are exited.

##### THREE BYTE ADDRESSING:

10. For Index type 2 (3 byte), the system shows 1 sector off when compared to standard 2200 indices.
11. The RENAME command may corrupt a disk index on a 3 byte surface.
12. The LOADDAT command does not work properly with an address beyond 16 meg.
13. VERIFY does not respond properly when verifying 65534 to 65536.
14. Cannot boot from a 3 byte surface if the O/S is beyond 16 meg.

##### DISK RELATED:

15. If a COPY is done from disk A to disk B and the last sector on B is reached before the COPY is complete, an error I98 occurs which is normal. However, address B is now hung to all other users until you key RESET from the partition that did the COPY.

16. VERIFY does not work properly with the 2275 if verifying just sector 0.
17. The MOVE command causes the Catalog END to become the Current END on the output disk. The MOVE command should not change the Catalog END on the output disk and did not in the past.
18. If a DS with an R4 prom is scratched with END to 65535, the END CATALOG AREA shown with LIST is 94967295.

SPECIFIC COMMAND RELATED:

19. The INPUT CURSOR command may intermittently hang.
20. LISTS & LISTSD do not work correctly to a system or terminal printer. If the printer requires a printer driver it will not linefeed. If the printout should take more than 1 screen, the 2nd screen does not occur.

SELECT H:

21. If 2 partitions are constantly accessing the same DS, only 1 with SELECT H ON, the partition using SELECT H ON will hang until the 2nd partition finishes if using the 22C11-HS.

MXF:

22. MXF Octopus ports will not give a DTR indication to a modem. Therefore they will not support a remote terminal. Ports 1 and 2 are OK.
23. If RESET is keyed during a GIO/005 command to an MXF port, intermittently subsequent GIO commands will no longer execute or will hang the port. Must reboot to correct. Problem is more persistent with ports 2-16.
24. The PRINT AT command does not position properly with the MXF in some cases.

OTHER:

25. If using the Make a Reference List of File Names Utility (Moving a Selected List of Files on newer releases) and after selecting your files, option 4 is used to save the list in a program file, an error A02 occurs on line 30, which is a COM statement.
26. If using 2 22C11-HS Controllers, the 2nd 22C11-HS always fails the 'System Interface Card Test on the first pass only.

Included with the enclosed software is a TEST SITE Agreement to be signed and returned to Wang. Please notify me of any problems which may occur or for any questions.

Sincerely,

Mike Bahia  
2200 Product Support  
M/S 019-690  
Tel: 508-656-0256

January 20, 1994  
Wang Laboratories, Inc.  
1 Industrial Avenue  
Lowell, MA 01851 USA

Release Notes  
for  
CS/386 TURBO Maintenance Release 1.25.00  
for beta test

This Turbo Maintenance Release, 1.25.00, represents an alternative release to Turbo Release 1.30.01. It includes all the fixes in release 1.30.01 except for some of those relating to the MXF. The purpose of this release is to provide an alternative to those users who have upgraded from Turbo General Release 1.10.00 and have experienced screen response and/or performance degradation problems which could occur under certain work load conditions. The down side is with this release there is a high probability of an occasional terminal hang in response to a LINPUT command. On a very intermittent basis dependent on workload, a terminal may not respond to the RETURN key after entering data for a prompt. Keying RETURN a second or third time or RESET may be necessary to continue. This release should be very similar to release 1.1 in regards to what can be expected for performance and with terminal hangs.

- Note 1: Use of maintenance release 1.18 and above requires new prompts on the CPU board at locations L50 and L64, and on all Turbo Controllers (MXF, 22C11-HS, and 22C11-SCSI) at locations L7 and L14 of the 210-9579 I/O Processor. These prompts are only available from R&D and/or Product Support at this time.
- Note 2: If upgrading from Turbo General Release 1.10 or Turbo Maintenance Release 1.15 and using Three Byte Addressing, a compatibility problem exists with O/S 1.18 and higher. A bug exists on 1.1 and 1.15 which moves the index up 1 sector but only on a 3 byte address. It may also result in index entries which normally should be in the last index sector being written out in the catalog area. A 3 byte address can easily be identified on a LIST of a disk by the & sign immediately following the the right most digit of the 'INDEX SECTORS =' entry. On 1.1 or 1.15, any file entries that the system tries to place in the last sector of the index could be a problem. If the first file was a program, this problem could be harmless because the first sector of a program contains just the filename and the index can work around it. If the first file following the index is a data file, a data integrity problem could exist. Writing to that data file could overwrite index entries that should be in the last sector of the index. Adding files to that address could result in the index entry be written out in the catalog area. Although filenames which should be located in the last sector can be loaded if programs or read or written to if data, they will not show up on a LIST.

On 1.18 and higher, 3 Byte indices have been corrected to start at sector 0. This results in an inability of the O/S to locate a file explicitly by name if on a 3 byte address created by 1.1 or 1.15. A D82, 'File not Found', is issued even though the file may show on a standard LIST. This is also the case if the 3 byte address was created on 1.18 or higher and the system was downgraded to 1.1 or 1.15. Explicit reference to a filename will fail because in each case the O/S is looking 1 sector off and not finding the file. Special care will need to be taken when upgrading to 1.30.01 from 1.1



or 1.15 to insure no files are lost. If a MOVE disk command is used with 1.18 or above to MOVE a 3 byte address created with 1.1 or 1.15, filenames in the last sector of the index (actually last sector + 1) will not be moved. If you are using 3 byte addressing on 1.15 or 1.1 please contact Product Support before upgrading to insure this problem is properly addressed. Failure to fully comprehend the situation could result in a number of files being lost. Releases 1.30.01 and 1.25.00 are the only current releases recommended for 3 Byte Addressing. See also 'Clarification' for additional related information.

The following list highlights in brief the problems fixed and modifications made in this release since the last General Release, 1.10:

- corrects problem with assigning Printer Drivers to address 204 for terminals beyond the first 16. (1.16)
- fixes problem where a MXE TC port might not show up in the Device Table as well as problems hogging those TC addresses. (1.16)
- corrects problem where with 3 byte addressing selected there could be a problem saving multiple data files with DATA SAVE DC OPEN. (1.16)
- corrects problem where calculations greater than E99 could give an incorrect answer, should give an error. (1.17)
- corrects a problem where printer drivers would not show up for any controller following an MXE or MXD. (1.18)
- corrects a problem where if using address 405 to PRINT to the screen, linefeeds would not be suppressed. (1.18)
- allows the SCSI floppy to read a 256 byte 360K or 1.2M 2200 diskette. (1.18)
- corrects problem where a rewind or retension of SCSI tape would fail with a virgin tape. (1.18)
- corrects problem where if a REM was followed by a hex 7D or hex 7E character, all subsequent commands on the same line would be ignored. (1.18Q)
- corrects an intermittent hang which could occur when mux'ing 2 CPUs to 2 disk drives if 2 or more partitions from each CPU were hogging both mux'd units. (1.18Q)
- if a program was enlarged to require an additional sector and resaved within a program, the RESAVE would appear to successfully execute but the saved file would be blank. (1.29.00)
- if in immediate mode a string of 87 ls were added in a PRINT command, the O/S would blow and the system would need to be rebooted. Other long string combinations could also cause problems. (1.29.00)
- SELECT NEW would default to OLD after a CLEAR or LOADRUN. Now, the only way to change the NEW/OLD default is with the SELECT command. SELECT OLD is still the default on power up. (1.29.00)
- a line with a DEFFN' statement may not execute any command following it on the same line if in a Global with a higher partition #. (1.29.00)
- the RENAME command could corrupt the disk if renaming a program on a 3 byte address. (1.30.00)
- the LOADDAT and SAVEDAT commands would not work on a 3 byte address beyond 65534. (1.30.00)
- if an address with more than 65534 sectors had been scratched as a 2 byte catalog (less than 65535 sectors), a MOVEEND command beyond 65535 could be executed without an error and could corrupt the index. Now it correctly returns an illegal value for any number beyond 65534. (1.30.00)
- if a COPY command resulted in an error, the address involved could be locked out to all other users unless that same partition issues a RESET or reaccesses that address before another partition does. (1.30.00)

- if an address with 65535 sectors or more was scratched for 65535 sectors, the End Catalog Area would show an illegal address. To set the Catalog End to 65535, a 3 byte address must be created. (1.30.00)
- the MOVE command would cause the Catalog End to be set to the Current End. It now correctly uses the Catalog End from the input address unless otherwise specified. (1.30.00)
- a SCRATCH statement with index greater than 255 or catalog greater than 65535 would automatically create a 3 byte index. SCRATCHDISK& must now be used, otherwise the index or catalog will cause error P34, illegal value.
- the COPY command would not work with an address of 65535 or higher with SELECT 3 ON with Rel 1.30.00. (1.30.01)
- VERIFY would not work with an address of 65535 or higher with SELECT 3 ON with Rel 1.30.00. (1.30.01)

#### Enhancements:

The MOVE command has been enhanced to dynamically allow the creation of a 3 byte index or a 2 byte index on the output disk regardless of the index type on the input disk. The syntax for this is as follows:

MOVET/Dxx,TO&T/Dxx	creates a 3 byte index on the output disk
MOVET/Dxx,TO'T/Dxx	creates a 2 byte Type 1 index on the output

After the 2nd address, the index size (LS = #) and catalog size (END = #) can optionally be given by using a comma after the last address and after the index size if both options are used. If not specified, the MOVE command will create the same type index on the output disk as existed on the input disk. If a 2 byte index is MOVE'd and either the index size or catalog end is specified without using the ' or &, the output index will always default to a type 1 index. To create an index size greater than 255 or a catalog end greater than 65534 using a 2 byte index as the input, the & must be specified. Otherwise a P34, illegal value error, will occur.

#### Clarification:

SELECT 3 ON/OFF - is used in conjunction with 3 byte addressing, an optional Turbo feature with the new DS or CS-D R4 prom. Three Byte Addressing provides 1 additional byte for each address entry when creating a disk catalog. This enables the user to create a disk catalog which can extend beyond 65534 sectors and/or an index greater than 256 sectors. Because alphavariabls can be used within certain disk commands to specify the sector address, the system must now be able to identify whether the alphavariabls is 2 or 3 bytes long. This is the main purpose of the SELECT 3 command. SELECT 3 must be on to read a 3 byte address when using an alphavariabls for a sector address in a DATALOAD or DATASAVE command. Subsequently, a SELECT 3 OFF command must be issued from the same partition if switching back to a 2 byte address in an alphavariabls. Failure to set SELECT 3 ON and OFF appropriately when using alphavariabls for sector addresses will likely corrupt your disk. Additionally, unless explicitly identified as a 3 byte command (use of & in a SCRATCH or MOVE), SELECT 3 is required for the system to accept an address beyond sector 65534 in a disk command.

## Known anomalies:

### PERFORMANCE:

1. When inputting data from the keyboard in response to a LINPUT command, the possibility of an intermittent terminal hang exists when RETURN is keyed to enter the data. By keying RETURN a second or third time or HALT/STEP or RESET the problem can be circumvented. This problem has no affect on other users and it's frequency will depend on workload. Worst case would be sites with multiple terminals doing constant data entry where this problem might be seen 1 to 3 times a day.

### 22C11-HS HIGH SPEED PRINTER PORT:

2. The High Speed printer buffer has a 1 character overflow. If the data string sent to the printer exceeds the remaining space in the buffer a hang occurs.
3. A special machine code command to check printer ready can cause a problem with the high-speed printer port on the 22C11-HS. This program works perfectly with the old bus indicating READY or NOT READY if you deselect the printer. On the 22C11-HS, READY is usually indicated even without a printer connected. If the command is looped on while the printer is deselected, within approximately 5-10 minutes the system is hung until the printer is selected.
4. A GIO sequence which works with the 386 and on the old bus to determine if the printer is READY or NOT READY if used with the 22C11-HS can cause the disk port on that board to hang or severely slow down.
5. After a warm boot, \$INIT"SYSTEM", if using a printer with a buffer such as the PM017 on the 22C11-HS, some garbage characters will print out preceding the first printed data.

### MUXing DISKS:

6. Intermittent I90 errors occur if using the 22C11-HS Mux port. The more terminals controllers in the Turbo the more likely the problem.
7. If using the 22C11-HS Mux port to boot, all other CPUs using the common 2275MUX will be locked out of all access through that controller until @GENPART is loaded.
8. If a Turbo housing a 2275MUX is powered off and on, all access by secondary CPUs through the 2275MUX will hang until either RESET is keyed on the CPU attempting access or the Turbo accesses that address.
9. If boot diagnostics are executed on the Turbo through a 22C80, all disk access by other CPUs through the common 2275MUX will hang until the diagnostics are exited.

### DISK RELATED:

10. VERIFY does not work properly with the 2275 if verifying just sector 0 on the 22C11-HS. The entire disk is verified.

### SPECIFIC COMMAND RELATED:

11. The MAT MERGE/MOVE/SEARCH/SORT will now erroneously accept arrays with parameters exceeding 255 rows or columns. However, the system cannot reliably handle data beyond those limits. Manipulating an array in a MATMOVE which exceeds those parameters can result in system hangs or data integrity errors.
12. The INPUT CURSOR command may intermittently hang.
13. LISTS & LISTSD do not work correctly to a system or terminal printer. If the printer requires a printer driver it will not linefeed. If the printout should take more than 1 screen, the 2nd screen does not occur.

SELECT H:

14. If 2 partitions are constantly accessing the same DS, only 1 with SELECT H ON, the partition using SELECT H ON will hang until the 2nd partition finishes if using the 22C11-HS.

MXF:

15. MXF Octopus ports will not give a DTR indication to a modem. Therefore they will not support a remote terminal. Ports 1 and 2 are OK.

16. Some TC functions which run correctly on the MXE may fail with the MXF. Certain GIO commands used to 'send control vector' may hang or result in error.

17. If RESET is keyed during a GIO/005 command to an MXF port, intermittently subsequent GIO commands will no longer execute or will hang the port. Must reboot to correct. Problem is more persistent with ports 2-16.

18. The PRINT AT command does not position properly with the MXF in some cases.

OTHER:

19. If using 2 22C11-HS Controllers, the 2nd 22C11-HS always fails the 'System Interface Card Test' on the first pass only.

Please notify me of any problems which may occur or for any questions.

Sincerely,

Mike Bahia  
2200 Product Support  
M/S 019-690  
Tel: 508-656-0256

Release Note  
for  
CS/386 Maintenance Release  
1.1z

The aforementioned maintenance release represents the latest CS/386 Operating System software. The @MVP microcode file has been modified to correct a number of unique problems. The following list highlights in brief the problems fixed and modifications made to the operating system since the last General Release of the Operating System, release 1.10:

- corrects possible P59 error redimensioning an array in an overlay. (1.11)
- corrects problem where spaces are removed from IF THEN REM and ERROR REM. (1.14)
- corrects problem with DATALOAD AC OPEN command. (1.15)
- with a 1.2 Meg DOS formatted diskettes (512 byte sector) a maximum of 2371 sectors may be utilized. (1.15)
- corrects possible S16 error on COPY in foreground when a common partition is addressed by 2 partitions. (1.15)
- corrects a problem with PACK/UNPACK when more than 1 '#' is used to the left of the decimal point. (1.17)
- corrects a problem with DATALOAD BAT where the system would successfully load a sector with a fractional number. (1.1a)
- corrects possible S16, S20, and S24 errors that could occur with 'global' partitions. (1.1a)
- corrects problem with MXE port where would intermittently 'Load Receive Code Translation' improperly causing 'end of record' detection errors. (1.1b)
- corrects hang condition that would occur if accessed a disk that was powered off. (1.1b)
- corrects hang condition occurring when 3 disk addresses are hogged with the same \$OPEN command with SELECT H ON. (1.1b)
- corrects intermittent I90 accessing the 2270A that could occur if RESET was keyed from another terminal. (1.1b)
- corrects problem where a terminal connected to a 212-3012 Triple Controller would intermittently go blank. (1.1b)
- corrects problem with SELECT H ON where the disk would not be hogged if a printer address was hogged with the same \$OPEN. (1.1c)
- corrects problem where a RESET, CLEAR, or LOADRUN would not clear a hogged device from the issuing partition. (1.1m)
- corrects problem printing from the last port of the MXE under certain conditions when using HEX(OA) to shut off 'Expanded Print' in connection with a PRINTUSING command. (1.1m)
- corrects problem with IF THEN command where an array greater than 32767 elements always indicated a value. (1.1m)
- corrects possible I92/I93 errors to disk when a independent partition is running a TC 'BISYNC' protocol. (1.1m)
- corrects possible I94 error which could occur with DATASAVE command using SELECT H ON in a multi-CPU environment. (1.1s)
- fixes problem of miscalculating fractional numbers when using CONVERT and PRINTUSING together with a mask with more than 1 '#' to the left of the decimal. (1.1s)

- corrects problem with the LISTDCT SP command where 'scratched' programs in 386 format would not be listed. (1.1s)
- corrects problem with the LIST DCT SD command which would incorrectly also list 'scratched' programs in 386 format. (1.1s)
- corrects problem where RESET will not clear a hogged MXE TC port. (1.1s)
- corrects problem where intermittently if 2 printer drivers were active simultaneously and used different codes for the same function, the wrong driver could be accessed resulting in the addition of unwanted characters or alterations in the printout. (1.1s)
- fixes problem using the laser printer driver wherein 2200WP an unwanted 'cf' would be printed on the 1st page of a document and an 'f' on all subsequent pages. (1.1s)
- fixes problem where a hogged TC address could be cleared with a \$CLOSE from a different partition. (1.1s)
- corrects problem where if a Katakana HEX(7E) followed a REM% command, all subsequent commands on that line would be ignored. (1.1s)
- corrects problem with SELECT H ON when clearing a hog of a slave address with RESET. (1.1t)
- corrects problem where a MXE port with no terminal assigned and hogged for TC by 1 partition, could be cleared with a \$CLOSE from a 2nd partition. (1.1y)
- corrects a problem using the Katakana character set where the RENUMBER command would not correctly change the line numbers for some GOTO commands. (1.1y)
- corrects a problem with the LIST' command where with the Katakana character set, some GOSUB statements followed by REM commands are incorrectly cross referenced. (1.1y)
- corrects problem where LIST # would not identify all cross referenced line numbers in a program and as such some programs would not RENUMBER correctly. (1.1z)

Many of the problems above may only pertain to certain previous releases. Problems with this release are currently undetermined. Please notify me of any problems you may find. Wang Laboratories thanks you for your continuing support.

Sincerely,

Mike Bahia  
2200 Support  
M/S 014-A3A  
Tel: 508-656-0256

6478A

XA0291S  
00.00.00

WANG LABORATORIES INC.  
PROBLEM TRACKING AND REPORTING  
COMPLETE DETAIL REPORT  
H E A D E R I N F O  
PROBLEM NUMBER M200017599

PAGE: 1  
21 OCT 1993  
11:36:50

PROBLEM NUMBER: M200017599  
PRIORITY P3

CUST NAME:  
CUST NUMBER:

PROBLEM TYPE: DCR  
LINK TO PROB NO:

CUST CONTACT:  
CUST CONT PHONE: - - -  
CUST ADDRESS 1:  
CUST ADDRESS 2:  
CUST ADDRESS 3:

SYSTEM MODEL NO: CS/386-400N  
GEN SYST MODEL: 2200 CS 386 CPU  
O. S. VERSION: 01 18  
HW MODEL NUMBER:  
SW MODEL NUMBER: OS  
SW VERSION: 01 18

CUST CITY:  
CUST ST/PROV:  
CUST ZIP: - CUST RDB:  
CUST COUNTRY:

ALL INFO. AVAILABLE: Y

SERIAL NUMBER:

RDB ASSIGNED: 8760  
PERSON ASSIGNED:  
ORIG NAME: BAHIA MICHAEL E  
ORIG EMPL NO: 00-04238  
ORIG PHONE: - - -  
ORIG RDB: 8760

CALL TRKG DATE: 00/00/00 00:00 DATE ENTER PTR: 08/12/92

CALL TRKG NO: RES DEPLOYED:

STATUS DATE: 10/21/93 DATE TO R&D: 08/12/92  
STATUS CODE: S C 595 WKDAYS IN R&D: 406.00  
STATUS ABBREV: PERM FIX TOT WKDAYS OPEN: 435.00  
STATUS DESC: PERMANENT FIX - GENERAL RELEASE

PROBLEM STATEMENT :BAHIA MICHAEL E DATE: 08/12/92 TIME: 09:55

SELECT NEW defaults to OLD after aCLEAR or LOAD RUN. Customers are spending money having all programs converted to NEW format. Because the system keeps defaulting back to OLD they start building up a number of programs in OLD format if any development work or changes are being made.

RESOLUTION TEXT :BAHIA MICHAEL E DATE: 10/21/93 TIME: 11:31

SC595. SELECT NEW has now been corrected to remain selected once executed until a SELECT OLD command is issued from the same partition. SELECT NEW will not default back to OLD after a CLEAR or LOAD RUN. Fix is included in Maint Releases 1.30 of both the CS/386 and Turbo. Closing call.

XA0291S  
00.00.00

W A N G   L A B O R A T O R I E S   I N C .  
P R O B L E M   T R A C K I N G   A N D   R E P O R T I N G  
C O M P L E T E   D E T A I L   R E P O R T  
P R O B L E M   D E T A I L  
P R O B L E M   N U M B E R                      M200017599

PAGE:            3  
21 OCT 1993  
11:36:50

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ASSIGNED:   BAHIA MICHAEL E            DATE: 09/23/93    TIME: 10:59  
Have fix for this on both 386 & Turbo w/ rel 1.30 & 1.29.00 respectively.  
Both releases have gone out for beta testing. Waiting for feedback.

ASSIGNED:   BAHIA MICHAEL E            DATE: 09/14/93    TIME: 16:15  
Now have new Turbo rel 1.29.00 which includes this fix. Need to field test  
O/S before closing.

ASSIGNED:   BAHIA MICHAEL E            DATE: 09/08/93    TIME: 09:07  
Have rolled this fix into new CS/386 Maint Rel 1.30 which we are currently  
testing. Should go out for beta test next week. Currently rolling this fix  
into the Turbo.

ASSIGNED:   BAHIA MICHAEL E            DATE: 08/30/93    TIME: 09:48  
Now have new CS/386 Maint Rel 1.29.02 which includes this change. Have been  
testing in house since the middle of last week. Will send out for beta test  
by the end of next week, the latest. This change will be rolled into the  
next Turbo rel which we will be working on by next week.

ASSIGNED:   BAHIA MICHAEL E            DATE: 07/09/93    TIME: 16:07  
We expect to implement this change on both the 386 and Turbo although it may  
not be on the next release.

ASSIGNED:   BAHIA MICHAEL E            DATE: 07/06/93    TIME: 17:00  
This is also true on the 386 and should be fixed there. Will request this be  
implemented.

ASSIGNED:   BAHIA MICHAEL E            DATE: 04/05/93    TIME: 11:38  
New R&D man on board. This should be fixed in next release.

ASSIGNED:   BAHIA MICHAEL E            DATE: 08/12/92    TIME: 10:45  
Sending to RDB 8332 for resolution.

ASSIGNED:   BAHIA MICHAEL E            DATE: 08/12/92    TIME: 09:55  
Type in SELECT NEW return.  
Do a LIST SELECT to verify NEW is selected.  
Do a CLEAR or LOAD RUN.  
Do a LIST SELECT to see OLD is now selected.



CS/386 Bug List  
for Maintenance Release 1.1z

July 7, 1993

1. M41/10576           FIXED W/ 1.29.01.  
Partition hangs if after pointing to a stack address ending in FF, it tries to address 340. Address 340 appears to be inadvertently hogged.
2. M41/11192           FIXED W/ 1.29.01.  
Partition hangs if after pointing to a stack address ending in FF, it tries to print to either a terminal or system printer.
3. M2/17416           FIXED W/ 1.29.02.  
Can blow the O/S if either add or subtract a string of 87 1s in an immediate mode PRINT statement. Should give an error as it will with 88 +1s. Also fails on Turbo. Symptoms vary in program mode.
4. M2/20092           FIXED W/ 1.29.01.  
If a program saved in NEW format using 'wrap' mode contains a DEFFN' for a special function key and is loaded into memory, pressing that SF' key before executing the program can blow the O/S. It should just give an error. To duplicate, key in the following program:  
10DEFFN'10: E9=1: RETURN  
Save the program to disk in NEW format using wrap mode with the following:  
SELECTNEW:SCRATCHDISKT/340,END=5000:SAVEDC W T/340,"TEST"  
To reproduce problem"           (less than & greater than surround W above)  
CLEAR  
LOADDCT/340,"TEST"  
Do not execute program. Key SF'10. Should give a P55 error, undefined variable, but blows O/S.
5. M8/20511           FIXED W/ 1.29.01.  
When scratching a program and saving again with the same name, a problem occurs when the program requires an additional sector. Use the following program to duplicate:  
10 R\$="TEST":S\$="SCRATCH0"  
20 SCRATCH T R\$: SAVEDCT()R\$:ERROR GOTO 40  
30 STOP "RESAVED"  
40 SCRATCHT R\$: SAVEDCT(R\$)S\$,1:SAVEDCT(1)R\$  
Scratch a floppy and save the program on it.  
SCRATCHDISKT/Dxx,END=1279:SAVEDCT/Dxx,"TEST"  
Select the floppy address as the default address.  
SELECTDISKDxx  
Run the program. "RESAVED" is printed on the screen and no problems. Now add the following lines to increase the space needed from 3 sectors to 4.  
50 REM AA  
60 REM BB  
70 REM CC  
80 REM DDD  
Run the program again and it appears to successfully execute with : being returned. Clear the program from memory and load it from disk and it fails with error A01, Not Enough Memory. LIST memory and nothing is there. If you run the program a second time after adding the 4 lines, "RESAVED" is printed out and the program is properly created. This also fails on the Turbo.

6. M2/17599

FIXED W/ 1.29.02.

SELECT NEW defaults to 'OLD' after a CLEAR or LOAD RUN. If SELECT NEW is specified, it should remain active until SELECT OLD is keyed in or the system is rebooted. SELECT NEW defaults the partition to save all programs in 386 or NEW format when active. The status of NEW or OLD can be verified with the LIST SELECT command. Additionally it may be useful to be able to SELECT NEW or OLD for all partitions during GENPART if there is an easy way to do this. Same problem occurs with the Turbo.

7. M900005029

If SELECT H ON (platter hog) is used in a 2 CPU environment with both CPUs hogging addresses in the same DS, intermittent disk hangs will result as well as erratic performance. To duplicate run the following program from at least 2 partitions on 2 CS/386 CPUs to the same DS. Make sure to assign a different CPU # to each CPU in @GENPART.

```
10 DIM A$(16)
20 SELECT H ON
30 X=INT(RND(1)*65024)
35 Y=INT(RND(1)*65024)
36 J=J+1:PRINT "PASS =" ; J,X,Y
40 $OPEN/D11
50 $OPEN/D12
60 DATALOADBAT/D11, (X,L) A$ ()
70 DATALOADBAT/D12, (Y,L) A$ ()
80 $CLOSE/D11
90 $CLOSE/D12
100 GOTO 30
```

The pass counts should be fairly even on both CPU's if an equal number of partitions run the test from both. They are not and even between partitions on the same CPU there can be significant discrepancies. For example, in my configuration of 2 terminals on each CPU, all started at the same time, the pass counts at one point were:

CPU1	CPU2
Terminal 1 - 4000	Terminal 1 - 3579
Terminal 2 - 5092	Terminal 2 - 3170

You will also notice that frequently 1 of the 4 terminals is just sitting there waiting for a turn which is why the pass counts become so varied. With a large number of partitions running this test, symptoms are likely to be dramatically worse.

8. M2/17352

The 2270A SSSD 8" Floppy unit does not work properly with the current CS/386 O/S. A newly formatted diskette will return intermittent errors on VERIFY, each time in different sectors. On random reads, intermittent I90s and I97s will occur and possibly hangs. To duplicate run the following program:

```
10 DIM A$(16)
20 X=INT(RND(1)*1023)
30 PRINT X
40 DATALOADBAT/320, (X,L) A$ ()
50 GOTO 20
```

CS/386 Bug List  
for Maintenance Release 1.1z

July 7, 1993

TURBO

- ✓ 1. M41/10576 "BALTS6N2"  
Partition hangs if after pointing to a stack address ending in FF, it tries to address 340. Address 340 appears to be inadvertently hogged. 1.29 ✓
- ✓ 2. M41/11192 "BALTS6N3"  
Partition hangs if after pointing to a stack address ending in FF, it tries to print to either a terminal or system printer. 1.29 ✓
- ✓ 3. M2/17416 "BALTS6N5"  
Can blow the O/S if either add or subtract a string of 87 1s in an immediate mode PRINT statement. Should give an error as it will with 88 +1s. Also fails on Turbo. Symptoms vary in program mode. 237 MAX 102 26444
- ✓ 4. M2/20092 "NEWWRAP"  
If a program saved in NEW format using 'wrap' mode contains a DEFFN' for a special function key and is loaded into memory, pressing that SF' key before executing the program can blow the O/S. It should just give an error. To duplicate, key in the following program:  
10DEFFN'10: E9=1: RETURN  
Save the program to disk in NEW format using wrap mode with the following:  
SELECTNEW:SCRATCHDISKT/340,END=5000:SAVEDC<W>T/340,"TEST"  
To reproduce problem" (less than & greater than surround W above)  
CLEAR  
LOADDCT/340,"TEST"  
Do not execute program. Key SF'10. Should give a P55 error, undefined variable, but blows O/S. 1.29 ✓
- ✓ 5. M8/20511 "P8/20511" "NTHTST"  
When scratching a program and saving again with the same name, a problem occurs when the program requires an additional sector. Use the following program to duplicate: 1.29 ✓  
10 R\$="TEST":S\$="SCRATCH0"  
20 SCRATCH T R\$: SAVEDCT() R\$:ERROR GOTO 40  
30 STOP "RESAVED"  
40 SCRATCH T R\$: SAVEDCT(R\$) S\$, 1(SAVEDCT(1) R\$)  
Scratch a floppy and save the program on it.  
SCRATCHDISKT/Dxx,END=1279:SAVEDCT/Dxx,"TEST"  
Select the floppy address as the default address.  
SELECTDISKDxx  
Run the program. "RESAVED" is printed on the screen and no problems. Now add the following lines to increase the space needed from 3 sectors to 4.  
50 REM AA  
60 REM BB  
70 REM CCC  
80 REM DDD  
Run the program again and it appears to successfully execute with : being returned. Clear the program from memory and load it from disk and it fails with error A01, Not Enough Memory. LIST memory and nothing is there. If you run the program a second time after adding the 4 lines, "RESAVED" is printed out and the program is properly created. This also fails on the Turbo.  
*RENAME TEST W/ S\$. THIS & SAVES ALL LINES UP TO LINE 1 WHICH DOES NOT EXIST SO NOTHING IS SAVED. IF PLACED AT LINE 45 ALONE, NO FAIL*

~~HALT/STEP~~ BUG WHEN G10 EXECUTED. TESTED OK 1/12/94 w/ FORMAT - DSCF16.

WRITE PROTECTED 1.2 M RETURNS I93 ON WRITE, SHOULD RETURN I95.

IMAGE % COMMAND MAY NOT WORK PROPERLY w/ CERTAIN CHARACTERS.

LISTS FROM 204 w/ DRIVE1 ONLY PRINTS 1ST LINE. OK AT 215.

✓ 6. M2/17599

SELECT NEW defaults to 'OLD' after a CLEAR or LOAD RUN. If SELECT NEW is specified, it should remain active until SELECT OLD is keyed in or the system is rebooted. SELECT NEW defaults the partition to save all programs in 386 or NEW format when active. The status of NEW or OLD can be verified with the LIST SELECT command. Additionally it may be useful to be able to SELECT NEW or OLD for all partitions during GENPART if there is an easy way to do this. Same problem occurs with the Turbo.

TURBO  
1.29.00

7. M900005029

If SELECT H ON (platter hog) is used in a 2 CPU environment with both CPUs hogging addresses in the same DS, intermittent disk hangs will result as well as erratic performance. To duplicate run the following program from at least 2 partitions on 2 CS/386 CPUs to the same DS. Make sure to assign a different CPU # to each CPU in @GENPART.

```
10 DIM A$(16)
20 SELECT H ON
30 X=INT(RND(1)*65024)
35 Y=INT(RND(1)*65024)
36 J=J+1:PRINT "PASS =";J,X,Y
40 $OPEN/D11
50 $OPEN/D12
60 DATALOADBAT/D11,(X,L)A$()
70 DATALOADBAT/D12,(Y,L)A$()
80 $CLOSE/D11
90 $CLOSE/D12
100 GOTO 30
```

The pass counts should be fairly even on both CPU's if an equal number of partitions run the test from both. They are not and even between partitions on the same CPU there can be significant discrepancies. For example, in my configuration of 2 terminals on each CPU, all started at the same time, the pass counts at one point were:

	CPU1	CPU2
Terminal 1 -	4000	3579
Terminal 2 -	5092	3170

You will also notice that frequently 1 of the 4 terminals is just sitting there waiting for a turn which why the pass counts become so varied. With a large number of partitions running this test, symptoms are likely to be dramatically worse.

8. M2/17352

The 2270A SSSD 8" Floppy unit does not work properly with the current CS/386 O/S. A newly formatted diskette will return intermittent errors on VERIFY, each time in different sectors. On random reads, intermittent I90s and I97s will occur and possibly hangs. To duplicate run the following program:

```
10 DIM A$(16)
20 X=INT(RND(1)*1023)
30 PRINT X
40 DATALOADBAT/320,(X,L)A$()
50 GOTO 20
```

# 386 SOURCE CODE FROM TAIWAN COMPILED BY TONY PARKER

PRINT # VERSION 1.2

1.1.2 BUG<sup>FIX</sup> - LIST # DOES NOT REFERENCE ALL LINES W/ DATA.5 ON LINE 1225. FIXED

CGENPART NORMAL LIST# ALMOST 8 FULL SCREENS

ADD LINE 1225 DATA.5 LIST' 2 FULL SCREENS & 2

1224 DATA.5

" "

1224 DATA 5

" "

REMOVE 1224

" "

LOAD RUN CGENPART

" "

WARM BOOT.

" "

P2/17401

1.1.2 BUG FROM BALT SIGN (M41/10576)

LOAD DCT "SD SORT1"

ADD 1 SELECT #31/DIO: COM N8 TO PROGRAM SD SORT1 & HANGS

REMOVE COM N8 & OK (ONCE FAILS MUST <sup>CLR &</sup> RELOAD TO GET TO WORK)

PUT STOP <sup>IN FRONT</sup> ~~AT BEGIN~~ <sup>DATA LOAD</sup> OF 2037

RUN HALTS AT 13

CONT HALT AT 16

<sup>2037 2038 2044</sup>  
CONT & HANGS ON DATA LOAD ON LINE 2037

STOP ON 3100 TOO LATE OK IF HALT STEP OVER DATA LOAD

STOP ON 2044 TOO LATE

STOP ON 2037 AFTER DATA LOAD TOO LATE

DELETED 5, 10, 14, 16, 17, 18, 19, 20, 26 <sup>BEFORE</sup> <sup>GO TO</sup> 28, 30, 32, 34, 1380, 1382, 1384, 1386, 1388, 1390 <sup>BALTSIGN</sup>

P37 ON LINE 1730 GOSUB '171 UNDER DEFFN'

ADD 1730, 1732, 1734 A04 ON LINE 2000 ON GOSUB '212

~~DELETE 2038, 2040, 2042, 2044, 2034 LINE TO GO TO 2046~~

# BASIC-2 ENHANCEMENTS

1. GOSUB' 256-65535

NO

2 LIMITS

4 FIELD LIMIT

3 DIM A\$100 MAX P59 or P50 IF MADE LARGER

DIM A(255) MAX P59 IF LARGER

5 LIST SELECT

✓

6. SELECT A

✓

7. SELECT 3

NO

8. SELECT Y

NO

9. PRINT # CPU

✓

10. ROTATE

NO

11. \$MOVE I/T/DIO, TO I/340,

NO

XA0291S  
00.00.00

W A N G   L A B O R A T O R I E S   I N C .  
P R O B L E M   T R A C K I N G   A N D   R E P O R T I N G  
C O M P L E T E   D E T A I L   R E P O R T  
H E A D E R   I N F O  
P R O B L E M   N U M B E R                      M200017145

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22 JUN 1993  
11:10:44

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PROBLEM NUMBER: M200017145                      CUST NAME:  
PRIORITY                      P1                      CUST NUMBER:  
  
PROBLEM TYPE:        PROB                      CUST CONTACT:  
LINK TO PROB NO:                      CUST CONT PHONE:        -   -   -  
   CUST ADDRESS 1:  
   CUST ADDRESS 2:  
   CUST ADDRESS 3:  
SYSTEM MODEL NO: CS-386                      CUST CITY:  
GEN SYST MODEL:    2200 CS 386 CPU           CUST ST/PROV:  
O. S. VERSION:     01 1C                      CUST ZIP:                      -                      CUST RDB:  
HW MODEL NUMBER:                      CUST COUNTRY:  
SW MODEL NUMBER: 3271  
SW VERSION:        ??  
  
   RDB ASSIGNED:        8760  
   PERSON ASSIGNED: BAHIA MICHAEL E  
ALL INFO. AVAILABLE: Y                      ORIG NAME:                      BAHIA MICHAEL E  
   ORIG EMPL NO:            00-04238  
SERIAL NUMBER:                      ORIG PHONE:                      -   -   -  
   ORIG RDB:                      8760  
  
CALL TRKG DATE:    00/00/00    00:00    DATE ENTER PTR:    04/03/91  
CALL TRKG NO:                      RES DEPLOYED:  
  
STATUS DATE:        06/22/93                      DATE TO R&D:            04/05/93  
STATUS CODE:        S O 522                      WKDAYS IN R&D:          78.00  
STATUS ABBREV:     N-REP-UN-C                      TOT WKDAYS OPEN: 811.00  
STATUS DESC:        NOT REPRODUCIBLE/UNABLE TO DUPLICATE - CONF.

PROBLEM STATEMENT :BAHIA MICHAEL E    DATE: 04/03/91    TIME: 10:03  
When running 3270 Emulation on the 386 CPU, it intermittently causes I90, I92  
, I93, & I95 errors on other partitions accessing disk.

SYSTEM CONFIGURATION:

Host System	Problem System
VLSI CPU	386 CPU w/ 1 Meg Memory or greater
1 Terminal	3 Terminals
212-2228C Brd (address 01C)	212-2228D1 (address 1C)
TC Tools S/W Package	386 O/S 1.2 or 1.1C/ 3270 Emulation

Software for both systems was forwarded 4/2/91.  
Connect the 2228C to the 2228D via TC Cables (220-0332 or 220-0113) & 2228N  
Null Modem.

RESOLUTION TEXT :BAHIA MICHAEL E    DATE: 06/22/93    TIME: 11:03  
SC524. Original problem of intermittent disk errors when running 3270  
emulation resolved with maint rel 1.1M. Tested against maint rel 1.1z and no  
problems found. Tested with multiple terminals running both 3270 emulation  
and randomly reading disk.

XA0291S  
00.00.00

WANG LABORATORIES INC.  
PROBLEM TRACKING AND REPORTING  
COMPLETE DETAIL REPORT  
P R O B L E M   D E T A I L  
PROBLEM NUMBER            M200017145

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ASSIGNED: BAHIA MICHAEL E        DATE: 06/22/93    TIME: 11:02  
Ran overnight on 1.1z with 2 terminals running 3270 emulation, HOSTPING, and  
3 running a random disk read. No errors. Unable to duplicate problem.  
Closing call.

ASSIGNED: BAHIA MICHAEL E        DATE: 06/21/93    TIME: 14:00  
Setup with 2 terminals running 3270 emulation (HOSTPING) and 3 running disk  
exerciser program. Seems to be running fine through 1st half hour. Ran  
thru weekend with 1 terminal running 3270, 4 running disk test w/out fail.

ASSIGNED: BAHIA MICHAEL E        DATE: 06/18/93    TIME: 17:22  
Unable to reproduce problem with 1.1z. Disk errors caused by 3270 emulation  
was resolved with 1.1M which I discovered when I read back through the call.  
Will do some additional testing next week and if no other problems found will  
close call. Have been running 2 days on 1.1z with 1 terminal running 3270  
emulation and 4 others disk test without failure. Want to do some testing w/  
2 terminals running 3270 emulation just to see what kind of response occurs.

ASSIGNED: BAHIA MICHAEL E        DATE: 04/05/93    TIME: 09:07  
Problem reopened because it resulted in disk errors which should not happen.  
Call closed in error.

ASSIGNED: BAHIA MICHAEL E        DATE: 04/05/93    TIME: 08:59

ASSIGNED: BAHIA MICHAEL E        DATE: 02/12/93    TIME: 09:05  
Please update. What is current customer status? Is this still an issue?

ASSIGNED: BAHIA MICHAEL E        DATE: 01/12/93    TIME: 10:15  
What is the customer status on this situation? We do not have resources  
currently available to fix this. Please update.

ASSIGNED: BAHIA MICHAEL E        DATE: 10/19/92    TIME: 16:43  
Update acknowledged.

ASSIGNED: VOLKAITIS GEORGE        DATE: 10/19/92    TIME: 10:31  
Please ignore the last update . I updated the wrong call sorry.

ASSIGNED: VOLKAITIS GEORGE        DATE: 10/19/92    TIME: 09:12  
This problem has been corrected some time ago with a software change. This  
call can be closed.

ASSIGNED: BAHIA MICHAEL E        DATE: 09/10/92    TIME: 14:08  
No resources for this problem any longer. Not likely to be fixed. Will  
check with field before closing.

ASSIGNED: BAHIA MICHAEL E        DATE: 04/03/92    TIME: 15:55



A0291S  
/0.00.00

WANG LABORATORIES INC.  
PROBLEM TRACKING AND REPORTING  
COMPLETE DETAIL REPORT  
PROBLEM DETAIL  
PROBLEM NUMBER M200017145

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ASSIGNED: BAHIA MICHAEL E DATE: 04/03/92 TIME: 15:55  
Are we going to forget this problem exists? This is going to come back & bite us on the Turbo. Let's put an action plan on this!!!!

ASSIGNED: BAHIA MICHAEL E DATE: 01/31/92 TIME: 11:51  
We need to get someone working on this problem.

ASSIGNED: BAHIA MICHAEL E DATE: 10/29/91 TIME: 10:11  
What is happening with this call. Please update.

ASSIGNED: BAHIA MICHAEL E DATE: 10/16/91 TIME: 08:51  
When will test on Turbo be done. We need to get this done & get an action plan together.

ASSIGNED: RILEY J MICHAEL DATE: 08/09/91 TIME: 09:37  
Will test on Turbo system soon, see if problem is still there...

ASSIGNED: BAHIA MICHAEL E DATE: 07/12/91 TIME: 17:05  
Tyler has been looking at this problem but has not yet come to any conclusions. This problem needs attention. Help!!!

SIGNED: BAHIA MICHAEL E DATE: 06/21/91 TIME: 09:53  
Maint Rel 1.1M appears to have corrected disk errors but now partitions running TC applications appear to hang, especially when running disk exercise program in partitions 1&2 & HOSTPING in 5&6. Appears in this configuration partitions 5&6 are not getting a long enough time slice. Problem has been reproduced & TO has been looking into.

ASSIGNED: BAHIA MICHAEL E DATE: 05/30/91 TIME: 13:16  
Maintenance Rel 1.1M has been tested against this problem in the lab & runs error free. Maint Rel is on-site & will be installed by next week.

ASSIGNED: RHODEN RICHARD A DATE: 05/22/91 TIME: 15:51  
Received software and sent it to the CE to install at customer site.

ASSIGNED: BAHIA MICHAEL E DATE: 04/23/91 TIME: 11:24  
The fix to this problem could be critical to the sale of a lot of 2200 h/w. Fix is critical in this regard. Please try to expedite solution.

ASSIGNED: RILEY J MICHAEL DATE: 04/17/91 TIME: 15:38  
This call is not a P1 problem... This is a Demo system... JMR

ASSIGNED: BAHIA MICHAEL E DATE: 04/03/91 TIME: 10:45  
Sending to RDB 8332 for resolution. Software delivered 4/2/91. This customer is currently testing the 386 CPU and if this problem can be resolved there is a good possibility a large number of CPUs may be ordered to run

XA0291S  
00.00.00

WANG LABORATORIES INC.  
PROBLEM TRACKING AND REPORTING  
COMPLETE DETAIL REPORT  
PROBLEM DETAIL  
PROBLEM NUMBER M200017145

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ASSIGNED: BAHIA MICHAEL E DATE: 04/03/91 TIME: 10:45  
similar packages. A quick fix could be very critical to the sale.

ASSIGNED: BAHIA MICHAEL E DATE: 04/03/91 TIME: 10:03  
Host System:

1. from TC Tools Disk LOAD RUN "START"
  2. from menu select '2 to IBM 3270 Host Simulator
  3. system comes back with "TC Board on 1D" change addr to 1C & RET
- HOST SIMULATOR should now be running.

386 Problem System:

- boot from disk provided and run "current" config, SF'15, Y RETURN, RETRN (contains O/S 1.2 from 4/1/91)
- Terminal 2 Partition 4 will be running 3270 Emulation
- Terminals 1 & 3 will be running random reads to D31 (change disk address as needed)

While the 3270 Emulation runs intermittent disk errors will occur from both terminals 1 & 3 simultaneously usually, every minute or so.

6/22 1.12 MXE - PARTS 1-4 MXE PARTS 5-8

PART	SIZE	TERM	PROG
1	12	0	3270STRT
2	32	0	3270STRT
3	120	1	3270AUTO
4	120	2	EXERCISE
5	120	5	HOSTPING HUNG PASS 0 WAITING TO SEND
6	120	6	HOSTPING HUNG PASS 1 - COMM ERROR - TRY AGAIN OR CALL NETWORK CONTROL WAITING TO SEND
7	120	3	EXERCISE

HALT TERM 1 (PART 4)

TERM 5 (PART 6) HUNG PASS 1 - COMM ERROR ON CONNECTING  
6 6 "

HALT TERM 1 & 2

SAME

HALT TERM 1, 2, & 3

SAME

HALT TERM 1, 2, 3, & 6

SAME

REBOOTED - NO AUTOLOAD PART 6

NO PROBLEM 685 PASSES

REBOOTED - NO AUTOLOAD PART 4 & 6

SAME AS

REBOOTED - PART 4 & 5 HOSTPING, 6 & 7 EXERCISE  
NO PROBLEM 859 PASSES

REBOOTED - 4 & 7 HOSTPING, 5 & 6 EXERCISE  
NO PROB

MADE MXD BAD 1, MXE BAD 2 - WON'T BOOT  
SCREEN BLANKS BEFORE O/S - DIAG MENU  
RESET OK

WORKED N/ KEY SF' C-MVP

PART 4 & 7 HOST PING, 3, 4, & 7 EXERCISE

WORKED OK FOR 65 PASSES ON 3270 OUT

HUNG IN BREAK LOOP TO CONNECT AFTER EITHER  
LOADING OR RESSAVING ABOUT

REBOOTED: HOSTPING OK UNTIL LABSD ABOUT IN  
Term 1

CHECKED GPSTAT & ERR 77 SHOWN ON PART 1

Release Note  
for  
CS/386 Maintenance Release  
1.1y

The aforementioned maintenance release represents the latest CS/386 Operating System software. The @MVP microcode file has been modified to correct a number of unique problems. The following list highlights in brief the problems fixed and modifications made to the operating system since the last General Release of the Operating System, release 1.10:

- corrects possible P59 error redimensioning an array in an overlay. (1.11)
- corrects problem where spaces are removed from IF THEN REM and ERROR REM. (1.14)
- corrects problem with DATALOAD AC OPEN command. (1.15)
- with a 1.2 Meg DOS formatted diskettes (512 byte sector) a maximum of 2371 sectors may be utilized. (1.15)
- corrects possible S16 error on COPY in foreground when a common partition is addressed by 2 partitions. (1.15)
- corrects a problem with PACK/UNPACK when more than 1 '#' is used to the left of the decimal point. (1.17)
- corrects a problem with DATALOAD BAT where the system would successfully load a sector with a fractional number. (1.1a)
- corrects possible S16, S20, and S24 errors that could occur with 'global' partitions. (1.1a)
- corrects problem with MXE port where would intermittently 'Load Receive Code Translation' improperly causing 'end of record' detection errors. (1.1b)
- corrects hang condition that would occur if accessed a disk that was powered off. (1.1b)
- corrects hang condition occurring when 3 disk addresses are hogged with the same \$OPEN command with SELECT H ON. (1.1b)
- corrects intermittent I90 accessing the 2270A that could occur if RESET was keyed from another terminal. (1.1b)
- corrects problem where a terminal connected to a 212-3012 Triple Controller would intermittently go blank. (1.1b)
- corrects problem with SELECT H ON where the disk would not be hogged if a printer address was hogged with the same \$OPEN. (1.1c)
- corrects problem where a RESET, CLEAR, or LOADRUN would not clear a hogged device from the issuing partition. (1.1m)
- corrects problem printing from the last port of the MXE under certain conditions when using HEX(OA) to shut off 'Expanded Print' in connection with a PRINTUSING command. (1.1m)
- corrects problem with IF THEN command where an array greater than 32767 elements always indicated a value. (1.1m)
- corrects possible I92/I93 errors to disk when a independent partition is running a TC 'BISYNC' protocol. (1.1m)
- corrects possible I94 error which could occur with DATASAVE command using SELECT H ON in a multi-CPU environment. (1.1s)
- fixes problem of miscalculating fractional numbers when using CONVERT and PRINTUSING together with a mask with more than 1 '#' to the left of the decimal. (1.1s)

- corrects problem with the LISTDCT SP command where 'scratched' programs in 386 format would not be listed. (1.1s)
- corrects problem with the LIST DCT SD command which would incorrectly also list 'scratched' programs in 386 format. (1.1s)
- corrects problem where RESET will not clear a hogged MXE TC port. (1.1s)
- corrects problem where intermittently if 2 printer drivers were active simultaneously and used different codes for the same function, the wrong driver could be accessed resulting in the addition of unwanted characters or alterations in the printout. (1.1s)
- fixes problem using the laser printer driver wherein 2200WP an unwanted 'cf' would be printed on the 1st page of a document and an 'f' on all subsequent pages. (1.1s)
- fixes problem where a hogged TC address could be cleared with a \$CLOSE from a different partition. (1.1s)
- corrects problem where if a Katakana HEX(7E) followed a REM% command, all subsequent commands on that line would be ignored. (1.1s)
- corrects problem with SELECT H ON when clearing a hog of a slave address with RESET. (1.1t)
- corrects problem where a MXE port with no terminal assigned and hogged for TC by 1 partition, could be cleared with a \$CLOSE from a 2nd partition. (1.1y)
- corrects a problem using the Katakana character set where the RENUMBER command would not correctly change the line numbers for some GOTO commands. (1.1y)
- corrects a problem with the LIST' command where with the Katakana character set, some GOSUB statements followed by REM commands are incorrectly cross referenced. (1.1y)

Many of the problems above may only pertain to certain previous releases. Problems with this release are currently undetermined. Please notify me of any problems you may find. Wang Laboratories thanks you for your continuing support.

Sincerely,

Mike Bahia  
2200 Support  
M/S 014-A3A  
Tel: 508-656-0256

6478A

Release Note  
for  
CS/386 Maintenance Release  
1.1t

The aforementioned maintenance release represents the latest CS/386 Operating System software. The @MVP microcode file has been modified to correct a number of unique problems. The following list highlights in brief the problems fixed and modifications made to the operating system since the last General Release of the Operating System, release 1.10:

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- with a 1.2 Meg DOS formatted diskettes (512 byte sector) a maximum of 2371 sectors may be utilized. (1.15)
- corrects possible S16 error on COPY in foreground when a common partition is addressed by 2 partitions. (1.15)
- corrects a problem with PACK/UNPACK when more than 1 '#' is used to the left of the decimal point. (1.17)
- corrects a problem with DATALOAD BAT where the system would successfully load a sector with a fractional number. (1.1A)
- corrects possible S16, S20, and S24 errors that could occur with 'global' partitions. (1.1A)
- corrects problem with MXE port where would intermittently 'Load Receive Code Translation' improperly causing 'end of record' detection errors. (1.1B)
- corrects hang condition that would occur if accessed a disk that was powered off. (1.1B)
- corrects hang condition occurring when 3 disk addresses are hogged with the same \$OPEN command with SELECT H ON. (1.1B)
- corrects intermittent I90 accessing the 2270A that could occur if RESET was keyed from another terminal. (1.1B)
- corrects problem where a terminal connected to a 212-3012 Triple Controller would intermittently go blank. (1.1B)
- corrects problem with SELECT H ON where the disk would not be hogged if a printer address was hogged with the same \$OPEN. (1.1C)
- corrects problem where a RESET, CLEAR, or LOADRUN would not clear a hogged device from the issuing partition. (1.1M)
- corrects problem printing from the last port of the MXE under certain conditions when using HEX(OA) to shut off 'Expanded Print' in connection with a PRINTUSING command. (1.1M)
- corrects problem with IF THEN command where an array greater than 32767 elements always indicated a value. (1.1M)
- corrects possible I92/I93 errors to disk when a independent partition is running a TC 'BISYNC' protocol. (1.1M)
- corrects possible I94 error which could occur with DATASAVE command using SELECT H ON in a multi-CPU environment. (1.1S)
- fixes problem of miscalculating fractional numbers when using CONVERT and PRINTUSING together with a mask with more than 1 '#' to the left of the decimal. (1.1S)

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- corrects problem where intermittently if 2 printer drivers were active simultaneously and used different codes for the same function, the wrong driver could be accessed resulting in the addition of unwanted characters or alterations in the printout. (1.1S)
- fixes problem using the laser printer driver wherein 2200WP an unwanted 'cf' would be printed on the 1st page of a document and an 'f' on all subsequent pages. (1.1S)
- fixes problem where a hogged TC address could be cleared with a \$CLOSE from a different partition. (1.1S)
- corrects problem where if a Katakana HEX(7E) followed a REM% command, all subsequent commands on that line would be ignored. (1.1S)
- corrects problem with SELECT H ON when clearing a hog of a slave address with RESET. (1.1T)

Many of the problems above may only pertain to certain previous releases. Problems with this release are currently undetermined. Please notify me of any problems you may find. Wang Laboratories thanks you for your continuing support.

Sincerely,

Mike Bahia  
2200 Support  
M/S 014-A3A  
Tel: 508-656-0256

6478A

Item Subject: CS/386 Maint Rel

The enclosed maintenance release resolves a number of problems. These problems include:

1. A problem when using the CONVERT & PRINTUSING commands together with a fractional #, the wrong value could be returned. P8/14181
2. When hogging a MXE TC port, unable to clear the hog with a RESET. P8/14405
3. LISTDCTSP would not list scratched program files if they were in NEW (386) format. P2/17284
4. Corrects problems with SELECT H ON that could result in hangs.
5. If 2 printers using drivers are simultaneously printing, especially if using EXPANDED PRINT, and different escape sequences (hex codes) are used to turn the EXPANDED PRINT on and off, the hex code for printer 2 could be sent to printer 1 or vice versa resulting in an unwanted character or failure to turn EXPANDED PRINT off or on. P2/17139
6. When using a Laser Printer with the @LASRJV1 printer driver using 2200 WP, an unwanted 'cf' will appear on the top of the 1st page and unwanted 'f's on the top of subsequent pages. P2/17281
7. A TC address hogged by 1 partition could be unhogged by sending a \$CLOSE from a 2nd partition. P2/17270
8. If a Katakana Dakoun (hex 7E) was used in a REM % command, all subsequent commands on the same line would be ignored. P2/17302
9. With Maint Rel 1.1Q, the DS Utilities 'Disk to Tape Backup' would hang when program 1st attempted to move tape with the message "Waiting for DS" on the screen. C9/5309

Please get back to me as soon as possible with any problems found with this release.

Best Regards,  
Mike Bahia  
2200 Support

Item Subject: Notes

Dick,

This is Rev 1.1q and have PROBLEM 9 and Multi-OPEN problem fixed, please testing.

1. Fixed Problem 9 that reported by HK
2. Fixed Multi-OPEN problem that reported by Mike and HK
3. LISTSP statement for New format program file that reported by Mike

Regards

Duncan Chou

p.s. Sorry for delay, there have a Register D0 NOT saved when D0 task switching in CS/386 O.S. and this is very old problem (Did not be found in before)



May 1991  
Wang Laboratories, Inc.  
One Industrial Avenue  
Lowell, MA 01851

Dear Wang CS/386 user,

The enclosed diskette represents the latest test release 1.1m of the CS/386 operating system software. The "@MVP " microcode file has been updated from release 1.10.. As the release diskette 1 of 2 is near a 1279 sector capacity, "@INSTALL" has been modified to allow a "@SYSFILE" of 35 sectors on diskette which will expand to allow a full 16 configurations when the system is installed on a hard disk. System Utilities were modified in release 1.10 in a number of modules.

The O.S. software represents minor improvement over release 1.10 which has been available. Problems fixed from 1.10 related to: a S16 syntax error encountered on certain conditions; spaces within a REM on an IF THEN REM or ERROR REM had been inadvertently removed. A problem platter hogging via SELECT H ON has supposedly been resolved; this capability requires this operating system and DS prom level revision 3.0. in all attached disk devices. A problem with DATA LOAD AC OPEN has been resolved; on a 1.2mb DOS formatted (512 byte sectors) diskette a maximum of 2371 sectors may be opened. Additional problems fixed from 1.10. include:

On keying of Shift/RESET to unhog a disk platter;  
.. with Edit Recall, with PRINT HEXOF, with PACK and UNPACK.  
.. with DOS read for file # greater than 15; .. with end of file on DOS read.  
.. with recovery from illegal microcommand sequence through a printer driver.  
.. with C61 overflow bug on PRINT 3.67 uparrow (1/.1)  
.. with LIST DT; with nested partitions; with SELECT H.

Enhancements - (these were included in Release 1.10)

A new command was added in 1.0B to provide an optional Date/Time stamp on saving or resaving and LIST DC T of program files. The default condition is no date/time stamp. A SELECT T ON or SELECT T OFF will activate this feature. The date time stamp is stored in the maximum numbered sector of the assigned program file space. The date / time stamp form is: mm-dd-yy hh:mm  
LIST SELECT will show all currently active selections.

A new command was added in 1.0C to enable and disable the Hog Platter function: SELECT H ON and SELECT H OFF. The default condition is SELECT H OFF.

LIST SELECT will show all currently active selections.

Known problems with this release. SELECT H should still not be used. We will try to notify you if we find there are any other problems. Please notify me if you have any problems.

Known problems within the support utilities. None.

Sincerely,

Tyler B. Olsen.  
CS/2200/386 Support  
MS 014-890  
Tel. 508/967-0339 Fax. 508/458-3213.

Multi-User Basic-2/386 Release 1.1M.

CS/386 Release 1.1M. diskettes.

Diskette 1 of 2.

Index = 2' Current End = 1279 Max =1279 AP=10 AD= 7

AD = 10

. @BOOT	4	02/15/90	
. @GEN.386	3		
. @GENPART	90	04/12/90	
. @INSTALL	27	05/31/90	** changed from CS/386 rel.1.1.10. new line 582 logic will OPEN new "@SYSFILE" of 53 sectors.
. @MENU	36	02/01/85	
. @MODYSYF	15	07/17/89	
. @MOVE1	39	02/02/90	
. @PSTAT	13	02/12/90	
. @SYSMPB	5	01/25/90	
. START	3		

AD = 7

. .STARTD	3		
. @@	56		
. @DG1	25		
. @MVP	837	CS/386 O.S. 1.1m ucode.	** changed from prior release.
. @MXEO	75	MXE microcode.	
. @PM017V3	12	Printer driver for PM017.	
. @SYSFILE	35	System configuration file. (shortened on diskette)	

Diskette 2 of 2. Same as release 1.10.

(replaces CS/386 release 1.0 disk 2 of 2)

Index = 7 Current End = 554 Max =1279 AP=12 AD= 7

AP = 12

. @BACKUP	55	01/09/89	
. @CLOC	24	05/09/86	
. @DAVFU	55	05/09/86	
. @FORMAT	46	12/11/87	
. @MOVEFIL	29	02/02/90	** changed from CS/386 release 1.0
. @MRTIAN	70	08/15/89	
. @RECOVER	54	01/09/89	
. @TO.CREO	6	04/13/90	** changed from CS/386 release 1.0
. @TO.CREF	54	04/13/90	** changed from CS/386 release 1.0
. @TO.DISK	22	04/09/90	** changed from CS/386 release 1.0
. @TO.SUBS	41	04/09/90	** changed from CS/386 release 1.0
. @TOIMAGE	24	04/09/90	** changed from CS/386 release 1.0

AD = 7

. @DATE	3		
. @DM50/V0	11	Printer driver for DM-50	
. @LASRJV1	10	Printer driver for LaserJet	
. @PM010V2	9	Printer driver for PM-010	
. @PM016V3	9	Printer driver for PM-016	
. @PM018V3	10	Printer driver for PM-018	
. @PM060V0	9	Printer driver for PM-060	

VS OFFICE Elect. 3C Mail Friday 05/03/91 11:00 am Page:  
To: Michael Bahia MS014-A3A/LOWELL  
From: Erwin Findt  
Subject: Problems CS/386 ver 1.1C Date: 05/02/91

Distribution:

Not Requested

Hello Mike,

I found a problem in the CS/386 operating system:

If you have an array with more then 32767 elements as in the example below the  
if THEN statement is running wrong so it's going to print "NOT EMPTY".

Example:

```
10 DIM A$(32768)
20 IF A$() = "" THEN PRINT "ARRAY IS EMPTY":ELSE PRINT "ARRAY IS NOT EMPTY"
```

Hopefully you can report this problem to TAIWAN and it can be fixed.

Best regards,

Erwin Findt

FIXED  
1.1C

To: Michael Bahia  
From: Willem Sloep  
Subject: CS386 errors?

MS014-AJA/LOWELL  
Date: 05/03/91

Distribution:

Not Requested

Mike,  
sorry for the mistake but on question one i need to tell more.  
The hogged device will not be cleared by the calling partition when you  
do a RESET, CLEAR or LOADRUN on that partition. The only way to close  
the device is entering \$CLOSE at the calling partition. This is different  
from the older CS/2200. In a programming environment resetting the hog  
status with mentioned keys is needed.

Regards, Willem Sloep

----- Reply -----  
To: Willem Sloep      From: Michael Bahia  
Subject: CS386 errors?      Date Sent: 30/04/91

Willem,  
Good to hear from you. Question 1 is functioning correctly. You should  
not be able to clear a hogged device by resetting any other terminal but the t  
erminal that initiated the hog. This should be the same on the standard MVP.  
You would not want to be able to clear a hogged device by keying RESET from  
another terminal.

On question 2, we had a similar problem fixed for PACK/UNPACK w/  
Maint Rel 1.17. Will have to test this out. In school next 2 weeks but will t  
ry to test at break or after class.

Regards,  
Mike

----- Original Memo -----  
To: Michael Bahia  
Subject: CS386 errors?      From: Willem Sloep  
Date Sent: 04/29/91

Hi Mike, how are you doing lately?

- Can i please ask you if the next two problems are known in the CS386 1.1c  
revision. If not i'll send PTR calls.
1. A device is not closed after RESET, CLEAR or LOADRUN command when it was  
hogged. On the old CS the device was closed after RESET. The only way now  
to close it is by closing it on the partition which opened the device.  
2. We encounter miscalculation with PRINTUSING in combo with CONVERT.  
There is miscalculation when there is more then one # sign before the  
dot. On old CS, no problems.  
Exc: 10 INPUT X  
20 PRINTUSING 100;X

30 CONVERT X TO X\$, (##.### )  
40 CONVERT X\$ TO X  
50 PRINT X  
60 %##.###

Entering a value of 10 is OK, value of 01 results in 10

Are this known bugs and maybe already solved or do you want me to send  
the PTRs (they are escalated to my branch from the field).  
By the way how is the CS line doing, when will we see 2.0 and Turbo?

Regards, and thanks in advance.  
Willem Sloep, Western PRC

BOTH PROBLEMS  
FIXED w/ 1.1M

March 1991  
Wang Laboratories, Inc.  
One Industrial Avenue  
Lowell, MA 01851

Dear Wang CS/386 user,

The enclosed diskette represents the latest test release 1.1C of the CS/386 operating system software. The "@MVP " microcode file has been updated from release 1.10.. As the release diskette 1 of 2 is near a 1279 sector capacity, "@INSTALL" has been modified to allow a "@SYSFILE" of 35 sectors on diskette which will expand to allow a full 16 configurations when the system is installed on a hard disk. System Utilities were modified in release 1.10 in a number of modules.

The O.S. software represents minor improvement over release 1.10 which has been available. Problems fixed from 1.10 related to: a S16 syntax error encountered on certain conditions; spaces within a REM on an IF THEN REM or ERROR REM had been inadvertently removed. A problem platter hogging via SELECT H ON has supposedly been resolved; this capability requires this operating system and DS prom level revision 3.0. in all attached disk devices. A problem with DATA LOAD AC OPEN has been resolved; on a 1.2mb DOS formatted (512 byte sectors) diskette a maximum of 2371 sectors may be opened. Additional problems fixed from 1.10. include:

On keying of Shift/RESET to unhog a disk platter;  
.. with Edit Recall, with PRINT HEXOF, with PACK and UNPACK.  
.. with DOS read for file # greater than 15; .. with end of file on DOS read.  
.. with recovery from illegal microcommand sequence through a printer driver.  
.. with C61 overflow bug on PRINT 3.67 uparrow (1/.1)  
.. with LIST DT; with nested partitions; with SELECT H.

Enhancements - (these were included in Release 1.10)

A new command was added in 1.0B to provide an optional Date/Time stamp on saving or resaving and LIST DC T of program files. The default condition is no date/time stamp. A SELECT T ON or SELECT T OFF will activate this feature. The date time stamp is stored in the maximum numbered sector of the assigned program file space. The date / time stamp form is: mm-dd-yy hh:mm  
LIST SELECT will show all currently active selections.

A new command was added in 1.0C to enable and disable the Hog Platter function: SELECT H ON and SELECT H OFF. The default condition is SELECT H OFF.

LIST SELECT will show all currently active selections.

Known problems with this release. SELECT H should still not be used. We will try to notify you if we find there are any other problems. Please notify me if you have any problems.

Known problems within the support utilities. None.

Sincerely,

Tyler B. Olsen.  
CS/2200/386 Support  
MS 014-890  
Tel. 508/967-0339 Fax. 508/458-0620.

Multi-User Basic-2/386 Release 1.1C.

CS/386 Release 1.1C. diskettes.

Diskette 1 of 2.

Index = 2' Current End = 1269 Max =1279 AP=10 AD= 7

AD = 10

. @BOOT	4	02/15/90	
. @GEN.386	3		
. @GENPART	90	04/12/90	
. @INSTALL	27	05/31/90	** changed from CS/386 rel.1.10. new line 582 logic will OPEN new "@SYSFILE" of 53 sectors.
. @MENU	36	02/01/85	
. @MODYSYF	15	07/17/89	
. @MOVE1	39	02/02/90	
. @PSTAT	13	02/12/90	
. @SYSMPVB	5	01/25/90	
. START	3		

AD = 7

. .STARTD	3		
. @@	56		
. @DGI	25		
. @MVP	827	CS/386 O.S. 1.1A ucode.	** changed from prior release.
. @MXEO	75	MXE microcode.	
. @PM017V3	12	Printer driver for PM017.	
. @SYSFILE	35	System configuration file. (shortened on diskette)	

Diskette 2 of 2. Same as release 1.10.

(replaces CS/386 release 1.0 disk 2 of 2)

Index = 7 Current End = 554 Max =1279 AP=12 AD= 7

AP = 12

. @BACKUP	55	01/09/89	
. @CLOC	24	05/09/86	
. @DAVFU	55	05/09/86	
. @FORMAT	46	12/11/87	
. @MOVEFIL	29	02/02/90	** changed from CS/386 release 1.0
. @MRTIAN	70	08/15/89	
. @RECOVER	54	01/09/89	
. @TO.CREO	6	04/13/90	** changed from CS/386 release 1.0
. @TO.CREF	54	04/13/90	** changed from CS/386 release 1.0
. @TO.DISK	22	04/09/90	** changed from CS/386 release 1.0
. @TO.SUBS	41	04/09/90	** changed from CS/386 release 1.0
. @TOIMAGE	24	04/09/90	** changed from CS/386 release 1.0

AD = 7

. @DATE	3		
. @DM50/VO	11	Printer driver for DM-50	
. @LASRV1	10	Printer driver for LaserJet	
. @PM010V2	9	Printer driver for PM-010	
. @PM016V3	9	Printer driver for PM-016	
. @PM018V3	10	Printer driver for PM-018	
. @PM060V0	9	Printer driver for PM-060	

November 1990  
Wang Laboratories, Inc.  
One Industrial Avenue  
Lowell, MA 01851

Dear Wang CS/386 user,

The enclosed diskette represents the latest test release 1.1A of the CS/386 operating system software. The "@MVP " microcode file has been updated from release 1.10.. As the release diskette 1 of 2 is near a 1279 sector capacity, "@INSTALL" has been modified to allow a "@SYSFILE" of 35 sectors on diskette which will expand to allow a full 16 configurations when the system is installed on a hard disk. System Utilities were modified in release 1.10 in a number of modules.

The O.S. software represents minor improvement over release 1.10 which has been available. Problems fixed from 1.10 related to: a \$16 syntax error encountered on certain conditions; spaces within a REM on an IF THEN REM or ERROR REM had been inadvertently removed. A problem platter hogging via SELECT H ON has supposedly been resolved; this capability requires this operating system and DS prom level revision 3.0. in all attached disk devices. A problem with DATA LOAD AC OPEN has been resolved; on a 1.2mb DOS formatted (512 byte sectors) diskette a maximum of 2371 sectors may be opened. Additional problems fixed from 1.10. include:

On keying of Shift/RESET to unhog a disk platter;  
.. with Edit Recall, with PRINT HEXOF, with PACK and UNPACK.  
.. with DOS read for file # greater than 15; .. with end of file on DOS read.  
.. with recovery from illegal microcommand sequence through a printer driver.  
.. with C61 overflow bug on PRINT 3.67 uparrow (1/.1)  
.. with LIST DT; with nested partitions; with SELECT H.

Enhancements - (these were included in Release 1.10)

A new command was added in 1.0B to provide an optional Date/Time stamp on saving or resaving and LIST DC T of program files. The default condition is no date/time stamp. A SELECT T ON or SELECT T OFF will activate this feature. The date time stamp is stored in the maximum numbered sector of the assigned program file space. The date / time stamp form is: mm-dd-yy hh:mm  
LIST SELECT will show all currently active selections.

A new command was added in 1.0C to enable and disable the Hog Platter function: SELECT H ON and SELECT H OFF. The default condition is SELECT H OFF.

LIST SELECT will show all currently active selections.

Known problems with this release. When using the MXE for async communications the receive translation table is not always initialized. We will try to notify you if we find there are any other problems. Please notify me if you have any problems.

Known problems within the support utilities. None.

Sincerely,

Tyler B. Olsen.  
CS/2200/386 Support  
MS 014-890  
Tel. 508/967-0339 Fax. 508/458-0620.

Multi-User Basic-2/386 Release 1.1A.

CS/386 Release 1.1A. diskettes.

Diskette 1 of 2.

Index = 2' Current End = 1269 Max =1279 AP=10 AD= 7

AD = 10

. @BOOT	4	02/15/90	
. @GEN.386	3		
. @GENPART	90	04/12/90	
. @INSTALL	27	05/31/90	** changed from CS/386 rel.1.10. new line 582 logic will OPEN new "@SYSFILE" of 53 sectors.
. @MENU	36	02/01/85	
. @MODYSYF	15	07/17/89	
. @MOVE1	39	02/02/90	
. @PSTAT	13	02/12/90	
. @SYSMPVB	5	01/25/90	
. START	3		

AD = 7

. .STARTD	3		
. @@	56		
. @DG1	25		
. @MVP	827	CS/386 O.S. 1.1A ucode.	** changed from prior release.
. @MXEO	75	MXE microcode.	
. @PM017V3	12	Printer driver for PM017.	
. @SYSFILE	35	System configuration file. (shortened on diskette)	

Diskette 2 of 2. Same as release 1.10.

(replaces CS/386 release 1.0 disk 2 of 2)

Index = 7 Current End = 554 Max =1279 AP=12 AD= 7

AP = 12

. @BACKUP	55	01/09/89	
. @CLOC	24	05/09/86	
. @DAVFU	55	05/09/86	
. @FORMAT	46	12/11/87	
. @MOVEFIL	29	02/02/90	** changed from CS/386 release 1.0
. @MRTIAN	70	08/15/89	
. @RECOVER	54	01/09/89	
. @TO.CREO	6	04/13/90	** changed from CS/386 release 1.0
. @TO.CREF	54	04/13/90	** changed from CS/386 release 1.0
. @TO.DISK	22	04/09/90	** changed from CS/386 release 1.0
. @TO.SUBS	41	04/09/90	** changed from CS/386 release 1.0
. @TOIMAGE	24	04/09/90	** changed from CS/386 release 1.0

AD = 7

. @DATE	3		
. @DM50/VO	11	Printer driver for DM-50	
. @LASRJV1	10	Printer driver for LaserJet	
. @PM010V2	9	Printer driver for PM-010	
. @PM016V3	9	Printer driver for PM-016	
. @PM018V3	10	Printer driver for PM-018	
. @PM060VO	9	Printer driver for PM-060	



September 1990  
Wang Laboratories, Inc.  
One Industrial Avenue  
Lowell, MA 01851

Dear Wang CS/386 user,

The enclosed diskette represents the latest test release 1.18 of the CS/386 operating system software. The "@MVP " microcode file has been updated from release 1.10.. As the release diskette 1 of 2 is near a 1279 sector capacity, "@INSTALL" has been modified to allow a "@SYSFILE" of 35 sectors on diskette which will expand to allow a full 16 configurations when the system is installed on a hard disk. System Utilities were modified in release 1.10 in a number of modules.

The O.S. software represents minor improvement over release 1.10 which has been available. Problems fixed from 1.10 related to: a S16 syntax error encountered on certain conditions; spaces within a REM on an IF THEN REM or ERROR REM had been inadvertently removed. A problem platter hogging via SELECT H ON has supposedly been resolved; this capability requires this operating system and DS prom level revision 3.0. in all attached disk devices. A problem with DATA LOAD AC OPEN has been resolved; on a 1.2mb DOS formatted (512 byte sectors) diskette a maximum of 2371 sectors may be opened. Additional problems fixed from 1.10. include:

- .. On keying of Shift/RESET to unhog a disk platter.
- .. with Edit Recall, with PRINT HEXOF, with PACK and UNPACK.
- .. with DOS read for file # greater than 15.
- .. with end of file on DOS read.
- .. with recovery from illegal microcommand sequence through a printer driver.
- .. with C61 overflow bug on PRINT 3.67 uparrow (1/.1)
- .. with LIST DT

Enhancements - (these were included in Release 1.10)

A new command was added in 1.0B to provide an optional Date/Time stamp on saving or resaving and LIST DC T of program files. The default condition is no date/time stamp. A SELECT T ON or SELECT T OFF will activate this feature. The date time stamp is stored in the maximum numbered sector of the assigned program file space. The date / time stamp form is: mm-dd-yy hh:mm LIST SELECT will show all currently active selections.

A new command was added in 1.0C to enable and disable the Hog Platter function: SELECT H ON and SELECT H OFF. If the platter hog function is enabled then \$OPEN #dd and \$CLOSE #dd will act like \$OPEN ! #dd and \$CLOSE ! #dd. The default condition is SELECT H OFF.

A new statement was added in 1.0C. \$OPEN ! /340 and \$CLOSE ! /340 will act like \$OPEN /340 and \$CLOSE /340.

LIST SELECT will show all currently active selections.

Known problems with this release are currently undetermined. We will try to notify you if we find there are any other problems. Please notify me if you have any problems.

Known problems within the support utilities. None.

Sincerely,

Tyler B. Olsen.  
CS/2200/386 Support  
MS 014-890  
Tel. 508/967-0339 Fax. 508/458-0620.

Multi-User Basic-2/386 Release 1.18.

CS/386 Release 1.18. diskettes.

Diskette 1 of 2.

Index = 2'      Current End = 1269 Max =1279      AP=10      AD= 7

AD = 10

. @BOOT	4	02/15/90	
. @GEN.386	3		
. @GENPART	90	04/12/90	
. @INSTALL	27	05/31/90	** changed from CS/386 rel.1.10. new line 582 logic will OPEN new "@SYSFILE" of 53 sectors.
. @MENU	36	02/01/85	
. @MODYSYF	15	07/17/89	
. @MOVE1	39	02/02/90	
. @PSTAT	13	02/12/90	
. @SYS MVPB	5	01/25/90	
. START	3		

AD = 7

. .STARTD	3		
. @@	56		
. @DG1	25		
. @MVP	827	CS/386 O.S. 1.18 ucode.	** changed from prior release.
. @MXEO	75	MXE microcode.	
. @PM017V3	12	Printer driver for PM017.	
. @SYSFILE	35	System configuration file. (shortened on diskette)	

Diskette 2 of 2. Same as release 1.10.

(replaces CS/386 release 1.0 disk 2 of 2)

Index = 7      Current End = 554 Max =1279      AP=12      AD= 7

AP = 12

. @BACKUP	55	01/09/89	
. @CLOC	24	05/09/86	
. @DAVFU	55	05/09/86	
. @FORMAT	46	12/11/87	
. @MOVEFIL	29	02/02/90	** changed from CS/386 release 1.0
. @MRTIAN	70	08/15/89	
. @RECOVER	54	01/09/89	
. @TO.CREO	6	04/13/90	** changed from CS/386 release 1.0
. @TO.CREF	54	04/13/90	** changed from CS/386 release 1.0
. @TO.DISK	22	04/09/90	** changed from CS/386 release 1.0
. @TO.SUBS	41	04/09/90	** changed from CS/386 release 1.0
. @TOIMAGE	24	04/09/90	** changed from CS/386 release 1.0

AD = 7

. @DATE	3		
. @DM50/VO	11	Printer driver for DM-50	
. @LASRJVI	10	Printer driver for LaserJet	
. @PM010V2	9	Printer driver for PM-010	
. @PM016V3	9	Printer driver for PM-016	
. @PM018V3	10	Printer driver for PM-018	
. @PM060VO	9	Printer driver for PM-060	

NOTE: If the prime surface in a DS cabinet has to service both VLSI and CS/386 systems you may want to restructure as follows:

. Rename the CS/386 OS microcode file "@MVP" to "@386". The OS microcode file name may not exceed four characters.

. Modify "@BOOT" as follows:

```
9000 REM ! prog = @BOOT PLS 08/03/89 CS/386/VLSI
9005 REM ! COPYRIGHT WANG LABORATORIES 1985, 1986, 1989
9010 DATA "@BOOT","***** SYSTEM SOFTWARE *****",3,0
9020 DATA "@MVP","CS/2200 Multiuser BASIC-2","P"
9030 DATA "@386","CS/386 Multiuser BASIC-2","P"
9040 DATA " "," ","B"
9050 DATA "@DG", "CS/2200 Diagnostics","M"
9055 DATA "@DG1","CS/386 Diagnostics","M"
9060 DATA "no more","end of menu list"
```

\*\*\*\*\* SYSTEM SOFTWARE \*\*\*\*\*

Select item with SPACE & BACKSPACE

MEMORY SIZE 8192 K

Key RUN to execute, CLEAR or PREV SCRN for previous screen

TERMINAL 1

CS/2200 Multiuser BASIC-2

CS/386 Multiuser BASIC-2

CS/2200 Diagnostics

CS/386 Diagnostics

Item Subject: Note for Release 1.17

September 1990  
Wang Laboratories, Inc.  
1 Industrial Avenue  
Lowell, MA 01851 USA

Re: CS/386 Operating System

The enclosed diskettes represent the latest test release 1.17 of the CS/386 operating system software. The "@MVP" microcode file has been updated from release 1.10.. As the release diskette 1 of 2 is near a 1279 sector capacity, "@INSTALL" has been modified to allow a "@SYSFILE" of 35 sectors on diskette which will expand to allow a full 16 configurations when the system is installed on a hard disk. System Utilities were modified in release 1.10 in a number of modules. Diskette 2 of 2 remains unchanged from Release 1.10.

The OS software represents minor improvement over release 1.10 which has been available. Problems fixed from 1.10 related to: a S16 syntax error encountered on certain conditions; spaces within a REM on an IF THEN REM or ERROR REM had been inadvertently removed. A problem platter hogging via SELECT H ON has supposedly been resolved; this capability requires this operating system and DS prom level revision 3.0. in all attached disk devices. A problem with DATA LOAD AC OPEN has been resolved; on a 1.2 mb DOS formatted (512 byte sectors) diskette a maximum of 2371 sectors may be opened. Additional problems fixed from 1.10. include:

- .. on keying of Shift/RESET to unhog a disk platter;
- .. with Edit Recall;
- .. with PRINT HEXOF;
- .. with PACK and UNPACK;
- .. with DOS read for file # greater than 15;
- .. with end of file on DOS read;
- .. with recovery from illegal microcommand sequence through a printer driver;
- .. with C61 overflow bug on PRINT 3.67 t ( 1/.1 )

Enhancements - (these were included in release 1.10).

A new command was added in 1.0B to provide an optional Date/Time stamp on saving or resaving and LIST DC T of program files. The default condition is no date/time stamp. A SELECT T ON or SELECT T OFF will activate this feature. The date time stamp is stored in the maximum numbered sector of the assigned program file space. The date / time stamp form is: mm-dd-yy hh:mm

A new command was added in 1.0C to enable and disable the Hog Platter function: SELECT H ON and SELECT H OFF. If the platter hog function is enabled then \$OPEN #dd and \$CLOSE #dd will act like \$OPEN ! #dd and \$CLOSE ! #dd. The default condition is SELECT H OFF.

A new statement was added in 1.0. \$ OPEN ! /340 and \$CLOSE ! /340 will act like \$OPEN /340 and \$CLOSE /340.

LIST SELECT will show all currently active selections.

Problems with this release are currently undetermined. We will try to notify you if we find there are any other problems. Please notify the f you have any problems.

June 1990  
Wang Laboratories, Inc.  
One Industrial Avenue  
Lowell, MA 01851

Dear Wang CS/386 user,

The enclosed diskette represents the latest test release 1.15 of the CS/386 operating system software. The "@MVP " microcode file has been updated from release 1.10.. As the release diskette 1 of 2 is near a 1279 sector capacity, "@INSTALL" has been modified to allow a "@SYSFILE" of 35 sectors on diskette which will expand to allow a full 16 configurations when the system is installed on a hard disk. System Utilities were modified in release 1.10 in a number of modules.

The O.S. software represents minor improvement over release 1.10 which has been available. Problems fixed from 1.10 related to: a S16 syntax error encountered on certain conditions; spaces within a REM on an IF THEN REM or ERROR REM had been inadvertently removed. A problem platter hogging via SELECT H ON has supposedly been resolved; this capability requires this operating system and DS prom level revision 3.0. in all attached disk devices. A problem with DATA LOAD AC OPEN has been resolved; on a 1.2mb DOS formatted (512 byte sectors) diskette a maximum of 2371 sectors may be opened.

Enhancements -

A new command was added in 1.0B to provide an optional Date/Time stamp on saving or resaving and LIST DC T of program files. The default condition is no date/time stamp. A SELECT T ON or SELECT T OFF will activate this feature. The date time stamp is stored in the maximum numbered sector of the assigned program file space. The date / time stamp form is: mm-dd-yy hh:mm LIST SELECT will show all currently active selections.

A new command was added in 1.0C to enable and disable the Hog Platter function: SELECT H ON and SELECT H OFF. If the platter hog function is enabled then \$OPEN #dd and \$CLOSE #dd will act like \$OPEN ! #dd and \$CLOSE ! #dd. The default condition is SELECT H OFF.

A new statement was added in 1.0C. \$OPEN ! /340 and \$CLOSE ! /340 will act like \$OPEN /340 and \$CLOSE /340.

LIST SELECT will show all currently active selections.

Known problems with this release are currently undetermined. We will try to notify you if we find there are any other problems. Please notify me if you have any problems.

Known problems within the support utilities. None.

Sincerely,

Tyler B. Olsen.  
CS/2200/386 Support  
MS 014-890  
Tel. 508/967-0339 Fax. 508/458-0620.

NOTE: If the prime surface in a DS cabinet has to service both VLSI and CS/386 systems you may want to restructure as follows:

. Rename the CS/386 OS microcode file "@MVP" to "@386". The OS microcode file name may not exceed four characters.

. Modify "@BOOT" as follows:

```
9000 REM ! prog = @BOOT PLS 08/03/89 CS/386/VLSI
9005 REM ! COPYRIGHT WANG LABORATORIES 1985, 1986, 1989
9010 DATA "@BOOT","***** SYSTEM SOFTWARE *****",3,0
9020 DATA "@MVP","CS/2200 Multiuser BASIC-2","P"
9030 DATA "@386","CS/386 Multiuser BASIC-2","P"
9040 DATA " ',' ',' ','B"
9050 DATA "@DG", "CS/2200 Diagnostics","M"
9055 DATA "@DG1","CS/386 Diagnostics","M"
9060 DATA "no more","end of menu list"
```

\*\*\*\*\* SYSTEM SOFTWARE \*\*\*\*\*

Select item with SPACE & BACKSPACE

Key RUN to execute, CLEAR or PREV SCRN for previous screen

MEMORY SIZE 8192 K

TERMINAL 1

CS/2200 Multiuser BASIC-2

CS/386 Multiuser BASIC-2

CS/2200 Diagnostics

CS/386 Diagnostics

June 1990  
Wang Laboratories, Inc.  
One Industrial Avenue  
Lowell, MA 01851

Dear Wang CS/386 user,

The enclosed diskette represents the latest test release 1.1~~4~~ of the CS/386 operating system software. The "@MVP " microcode file has been updated from release 1.10.. As the release diskette 1 of 2 is near a 1279 sector capacity, "@INSTALL" has been modified to allow a "@SYSFILE" of 35 sectors on diskette which will expand to allow a full 16 configurations when the system is installed on a hard disk. System Utilities were modified in release 1.10 in a number of modules.

The O.S. software represents minor improvement over release 1.10 which has been available. Problems fixed from 1.10 related to: a S16 syntax error encountered on certain conditions; spaces within a REM on an IF THEN REM or ERROR REM had been inadvertently removed. A problem platter hogging via SELECT H ON has supposedly been resolved; this capability requires this operating system and DS prom level revision 3.0.

Enhancements -

A new command was added in 1.0B to provide an optional Date/Time stamp on saving or resaving and LIST DC T of program files. The default condition is no date/time stamp. A SELECT T ON or SELECT T OFF will activate this feature. The date time stamp is stored in the maximum numbered sector of the assigned program file space. The date / time stamp form is: mm-dd-yy hh:mm LIST SELECT will show all currently active selections.

A new command was added in 1.0C to enable and disable the Hog Platter function: SELECT H ON and SELECT H OFF. If the platter hog function is enabled then \$OPEN #dd and \$CLOSE #dd will act like \$OPEN ! #dd and \$CLOSE ! #dd. The default condition is SELECT H OFF.

A new statement was added in 1.0C. \$OPEN ! /340 and \$CLOSE ! /340 will act like \$OPEN /340 and \$CLOSE /340.

LIST SELECT will show all currently active selections.

Known problems with this release are currently undetermined. We will try to notify you if we find there are any other problems. Please notify me if you have any problems.

Known problems within the support utilities. None.

Sincerely,

Tyler B. Olsen.  
CS/2200/386 Support  
MS 014-890  
Tel. 508/967-0339 Fax. 508/458-0620.

Multi-User Basic-2/386 Release 1.14.

CS/386 Release 1.14. diskettes.

Diskette 1 of 2.

Index = 2' Current End = 1265 Max =1279 AP=10 AD= 7

AD = 10

. @BOOT	4	02/15/90	
. @GEN.386	3		
. @GENPART	90	04/12/90	
. @INSTALL	27	05/31/90	** changed from CS/386 rel.1.10. new line 582 logic will OPEN new "@SYSFILE" of 53 sectors.
. @MENU	36	02/01/85	
. @MODYSYF	15	07/17/89	
. @MOVE1	39	02/02/90	
. @PSTAT	13	02/12/90	
. @SYSMPB	5	01/25/90	
. START	3		

AD = 7

. .STARTD	3		
. @@	56		
. @DG1	25		
. @MVP	823	CS/386 O.S. 1.14 ucode.	** changed from prior release.
. @MXEO	75	MXE microcode.	
. @PM017V3	12	Printer driver for PM017.	
. @SYSFILE	35	System configuration file. (shortened on diskette)	

Diskette 2 of 2. Same as release 1.10.

(replaces CS/386 release 1.0 disk 2 of 2)

Index = 7 Current End = 554 Max =1279 AP=12 AD= 7

AP = 12

. @BACKUP	55	01/09/89	
. @CLOC	24	05/09/86	
. @DAVFU	55	05/09/86	
. @FORMAT	46	12/11/87	
. @MOVEFIL	29	02/02/90	** changed from CS/386 release 1.0
. @MRTIAN	70	08/15/89	
. @RECOVER	54	01/09/89	
. @TO.CREO	6	04/13/90	** changed from CS/386 release 1.0
. @TO.CREF	54	04/13/90	** changed from CS/386 release 1.0
. @TO.DISK	22	04/09/90	** changed from CS/386 release 1.0
. @TO.SUBS	41	04/09/90	** changed from CS/386 release 1.0
. @TOIMAGE	24	04/09/90	** changed from CS/386 release 1.0

AD = 7

. @DATE	3		
. @DM50/VO	11	Printer driver for DM-50	
. @LASRV1	10	Printer driver for LaserJet	
. @PM010V2	9	Printer driver for PM-010	
. @PM016V3	9	Printer driver for PM-016	
. @PM018V3	10	Printer driver for PM-018	
. @PM060VO	9	Printer driver for PM-060	



NOTE: If the prime surface in a DS cabinet has to service both VLSI and CS/386 systems you may want to restructure as follows:

. Rename the CS/386 OS microcode file "@MVP" to "@386". The OS microcode file name may not exceed four characters.

. Modify "@BOOT" as follows:

```
9000 REM ! prog = @BOOT PLS 08/03/89 CS/386/VLSI
9005 REM ! COPYRIGHT WANG LABORATORIES 1985, 1986, 1989
9010 DATA "@BOOT","***** SYSTEM SOFTWARE *****",3,0
9020 DATA "@MVP","CS/2200 Multiuser BASIC-2","P"
9030 DATA "@386","CS/386 Multiuser BASIC-2","P"
9040 DATA " ',' ',' ','B"
9050 DATA "@DG", "CS/2200 Diagnostics","M"
9055 DATA "@DGL","CS/386 Diagnostics","M"
9060 DATA "no more","end of menu list"
```

\*\*\*\*\* SYSTEM SOFTWARE \*\*\*\*\*

Select item with SPACE & BACKSPACE

Key RUN to execute, CLEAR or PREV SCRN for previous screen

MEMORY SIZE 8192 K

TERMINAL 1

CS/2200 Multiuser BASIC-2  
CS/386 Multiuser BASIC-2

CS/2200 Diagnostics  
CS/386 Diagnostics

May 1990  
Wang Laboratories, Inc.  
One Industrial Avenue  
Lowell, MA 01851

Dear Wang CS/386 user,

The enclosed two diskettes represent the latest release 1.10 of the CS/386 operating system software. This software will shortly be sent out with every CS/386 system replacing all CS/386 Operating System diskettes which have previously been available. System Utilities have been modified in release 1.10 in a number of modules.

The O.S. software represents minor improvement over release 1.08 which has been available. Problems fixed from 1.08: change error 34 to recoverable; number system bug; printer driver bug. Problems fixed from 1.0C were minor and covered all the reported O.S. software bugs.

Enhancements -

A new command was added in 1.0B to provide an optional Date/Time stamp on saving or resaving and LIST DC T of program files. The default condition is no date/time stamp. A SELECT T ON or SELECT T OFF will activate this feature. The date time stamp is stored in the maximum numbered sector of the assigned program file space. The date / time stamp form is: mm-dd-yy hh:mm LIST SELECT will show all currently active selections.

A new command is added in 1.0C to enable and disable the Hog Platter function: SELECT H ON and SELECT H OFF. If the platter hog function is enabled then \$OPEN #dd and \$CLOSE #dd will act like \$OPEN ! #dd and \$CLOSE ! #dd. The default condition is SELECT H OFF.

A new statement was added in 1.0C. \$OPEN ! /340 and \$CLOSE ! /340 will act like \$OPEN /340 and \$CLOSE /340.

LIST SELECT will show all currently active selections.

Known problems with this release are currently undetermined. We will try to notify you if we find there are any other problems. Please notify me if you have any problems.

Known problems within the support utilities. None.

Subsequent operating system updates will be available through the Wang Regional offices.

Sincerely,

Tyler B. Olsen.  
CS/2200/386 Support  
MS 014-890  
Tel. 508/967-0339 Fax. 508/458-0620.

PN - 295-7432 FDA

Multi-User Basic-2/386 Release 1.10.

CS/386 Release 1.10. diskettes.

Diskette 1 of 2.

Index = 2' Current End = 1279 Max =1279 AP=10 AD= 7

AD = 10

. @BOOT	4	02/15/90	
. @GEN.386	3		
. @GENPART	90	04/12/90	** changed from CS/386 release 1.0
. @INSTALL	27	03/21/90	** changed from CS/386 rel.1.0 (REMs only)
. @MENU	36	02/01/85	
. @MODYSYF	15	07/17/89	
. @MOVE1	39	02/02/90	** changed from CS/386 release 1.0.
. @PSTAT	13	02/12/90	** changed from CS/386 release 1.0, minor bug.
. @SYSMPB	5	01/25/90	** changed date display to year 1990
. START	3		

AD = 7

. .STARTD	3		
. @@	56		
. @DGI	25	CS/386 Diagnostics.	** changed from prior release.
. @MVP	819	CS/386 O.S. 1.10 ucode.	** changed from prior release.
. @MXEO	75	MXE microcode.	
. @PM017V3	12	Printer driver for PM017.	
. @SYSFILE	35+18	System configuration file.	

Diskette 2 of 2. (replaces CS/386 release 1.0 disk 2 of 2)

Index = 7 Current End = 554 Max =1279 AP=12 AD= 7

AP = 12

. @BACKUP	55	01/09/89	
. @CLOC	24	05/09/86	
. @DAVFU	55	05/09/86	
. @FORMAT	46	12/11/87	
. @MOVEFIL	29	02/02/90	** changed from CS/386 release 1.0
. @MRTIAN	70	08/15/89	
. @RECOVER	54	01/09/89	
. @TO.CREO	6	04/13/90	** changed from CS/386 release 1.0
. @TO.CREF	54	04/13/90	** changed from CS/386 release 1.0
. @TO.DISK	22	04/09/90	** changed from CS/386 release 1.0
. @TO.SUBS	41	04/09/90	** changed from CS/386 release 1.0
. @TOIMAGE	24	04/09/90	** changed from CS/386 release 1.0

AD = 7

. @DATE	3		
. @DM50/VO	11	Printer driver for DM-50	
. @LASRJV1	10	Printer driver for LaserJet	
. @PM010V2	9	Printer driver for PM-010	
. @PM016V3	9	Printer driver for PM-016	
. @PM018V3	10	Printer driver for PM-018	
. @PM060VO	9	Printer driver for PM-060	

NOTE: If the prime surface in a DS cabinet has to service both VLSI and CS/386 systems you may want to restructure as follows:

. Rename the CS/386 OS microcode file "@MVP" to "@386". The OS microcode file name may not exceed four characters.

. Modify "@BOOT" as follows:

```
9000 REM ! prog = @BOOT PLS 08/03/89 CS/386/VLSI
9005 REM ! COPYRIGHT WANG LABORATORIES 1985, 1986, 1989
9010 DATA "@BOOT","***** SYSTEM SOFTWARE *****",3,0
9020 DATA "@MVP","CS/2200 Multiuser BASIC-2","P"
9030 DATA "@386","CS/386 Multiuser BASIC-2","P"
9040 DATA " ',' ',' ','B"
9050 DATA "@DG","CS/2200 Diagnostics","M"
9055 DATA "@DG1","CS/386 Diagnostics","M"
9060 DATA "no more","end of menu list"
```

\*\*\*\*\* SYSTEM SOFTWARE \*\*\*\*\*

Select item with SPACE & BACKSPACE

Key RUN to execute, CLEAR or PREV SCRn for previous screen

MEMORY SIZE 8192 K

TERMINAL 1

CS/2200 Multiuser BASIC-2  
CS/386 Multiuser BASIC-2

CS/2200 Diagnostics  
CS/386 Diagnostics

Mike,

This is Rev 1.0C O.S. of CS/386. The changes are,

1. Add new statement \$OPEN! 340 and \$CLOSE! 340 that will act like \$OPEN 340 and \$CLOSE 340.
2. Add new statement SELECT H ON and SELECT H OFF to enable and disable Hog Platter Function. If enable platter hog function then the \$OPEN #? and \$CLOSE #? will act like \$OPEN! #? and \$CLOSE! #?. (Default is OFF).
3. Change ERROR 34 to recovable.
4. Fix printer driver bug that reported by Mike. (No CARRIAGE RETURN ON BACKGROUND TASK
5. Fix number system bug that reported by Lars. AT 204)

If have any problem please let me know, Thanks.

Duncan

- P.S.
1. 2536DW bug still in processing.
  2. AC command for 1.2M diskette is no problem please try again.
  3. AC command for EOF please use error recovable to detect.

March 14, 1990

Tyler B. Olsen  
CS/2200/386 Support  
Wang Laboratories, Inc.  
One Industrial Avenue  
Lowell, MA 01851

MS 014-890  
Tel. 508/967-0339  
Fax. 508/458-0620.

Dear Wang CS/386 user,

The enclosed diskette represents the latest test release 1.0B of the CS/386 operating system software. The software represents significant improvement over what has heretofore been available with fixes to known OS problems incorporated. Problems fixed from 1.08: A02 problem; LIST V; LIST D; 204 printer driver deselection; \$OPEN / COPY problem; disk error setting a bit in the PHT item; INPUT SCREEN; INPUT.

. We at Wang are doing more extensive testing.

Enhancement -

A new command has been added to provide an optional Date/Time stamp on saving or resaving and LIST DC T of program files. The default condition is no date/time stamp. A SELECT T ON or SELECT T OFF will activate this feature. The date time stamp is stored in the maximum numbered sector of the assigned program file space. The date / time stamp form is: mm-dd-yy hh:mm  
LIST SELECT will show all currently active selections.

Known problems with this test release are currently undetermined. We will try to notify you if we find there are any other problems. Please notify me if you have any problems.

Known problems within the support utilities. The system utilities "Move File" and "Make a Reference List of File Names" should not be used to move files saved in the new 386 program format, eg. under SELECT NEW. "Move File" will move them but not set the index flag properly; "Create a Reference File" will not find these files. The standard MOVE command can be used to accomplish the move of these new 386 program format files.

Thank you for your support in testing of the CS/386 board and operating system. The attached diskette represents test release "1.0B", level above and beyond Release 1.0 of the CS/386 operating system. This diskette differs from Release 1.0 of the CS/386 in "@MVP" which is 819 sectors, (vs. on 1.0) and "@GENPART" which has been corrected to remember the CPU number on loading the "current" configuration. If any problems are encountered with these diskettes that are reproducible software errors please let me know as soon as possible.

Hopefully all existing software will function properly with no or minimal change. If changes are required we would like to be the first to know. Please let me know of successes and failures.

Subsequent operating system updates will be available through the Wang Regional offices.

Sincerely,

Tyler B. Olsen.  
CS/2200/386 Beta site coordinator

Multi-User Basic-2/386 Release 1.0B.

CS/386 Release 1.0B. diskettes.

Diskette 1 of 2.

Index = 7' Current End = 1278 Max =1279 AP=10 AD= 7

AD = 10

. @BOOT	4	07/31/88
. @GEN.386	3	
. @GENPART	89	01/08/90 ** changed from CS/386 release 1.0
. @INSTALL	26	08/15/89 ** changed from CS/386 rel.1.0 (REMs only)
. @MENU	36	02/01/85
. @MODYSYF	15	07/17/89
. @MOVE1	40	01/23/89
. @PSTAT	13	11/28/89 ** changed from CS/386 release 1.0, minor bug.
. @SYSMVPB	5	01/25/90 ** changed date display to year 1990
. START	3	

AD = 7

. .STARTD	3	
. @@	56	
. @DG1	21	CS/386 Diagnostics.
. @MVP	817+2	CS/386 O.S. 1.0B ucode. ** changed from prior release.
. @MXEO	75	MXE microcode.
. @PM017V3	12	Printer driver for PM017.
. @SYSFILE	35+18	System configuration file.

Diskette 2 of 2. (same as CS/386 release 1.0)

Index = 7 Current End = 545 Max =1279 AP=12 AD= 7

AP = 12

. @BACKUP	55	01/09/89
. @CLOC	24	05/09/86
. @DAVFU	55	05/09/86
. @FORMAT	46	12/11/87
. @MOVEFIL	28	01/23/89
. @MRTIAN	70	08/15/89
. @RECOVER	54	01/09/89
. @TO.CREO	6	02/06/89
. @TO.CREF	52	02/07/89
. @TO.DISK	23	01/20/89
. @TO.SUBS	37	01/19/89
. @TOIMAGE	25	02/07/89

AD = 7

. @DATE	3	
. @DM50/V0	11	Printer driver for DM-50
. @LASRJVI	10	Printer driver for LaserJet
. @PM010V2	9	Printer driver for PM-010
. @PM016V3	9	Printer driver for PM-016
. @PM018V3	10	Printer driver for PM-018
. @PM060V0	9	Printer driver for PM-060

To: Mike Bahia MS0126/LOWELL  
From: Herve Leger  
Subject: pb OS386 1.09 Date: 03/12/90

Distribution:

Not Requested

---

Mike,

Following our phone call, I confirm you my problem with OS386 ver.1.09  
using RESAVE statement :

- Program is saved from line 14 with 'W' parameter.
- Program is saved from line 50 with 'S' parameter.
- Program is saved from line 100 with 'R' parameter.
- Program is saved from line 4 without parameter.

(previous lines are LOST)

Thank you for your help - Best regards  
Herve Leger

Fixed w/ 1.0A.



January 30, 1990

Tyler B. Olsen  
CS/2200/386 Support  
Wang Laboratories, Inc.  
One Industrial Avenue  
Lowell, MA 01851

MS 014-890  
Tel. 508/967-0339  
Fax. 508/458-0620.

Dear Wang CS/386 user,

The enclosed diskette represents the latest test release 1.08 of the CS/386 operating system software. The software represents significant improvement over what has heretofore been available with fixes to known OS problems incorporated. A summary of resolved problems over 1.04 are: all differences between VLSI 3.4. and CS/386; SELECT ON ALERT; PRINTUSING not in right place; \$DISCONNECT ON; possible missing SF keys; workstation on/off hang. A problem in 1.06 relating to output to terminal printers (address 204) has been fixed. Additional problems have been fixed that were in 1.07 related to SELECT #16; LISTV in conjunction with undeclared globals; RENUMBER; and problems that generated an A02 or A01. We at Wang are doing more extensive testing.

Known problems with this test release are currently undetermined. The only problem so far reported was in a development environment: a combination of LISTV + an S24 syntax error + ignoring the error and trying a RUN or SAVE. We will try to notify you if we find there are any other problems. Please notify me if you have any problems.

Known problems within the support utilities. The system utilities "Move File" and "Make a Reference List of File Names" should not be used to move files saved in the new 386 program format, eg. under SELECT NEW. "Move File" will move them but not set the index flag properly; "Create a Reference File" will not find these files. The standard MOVE command can be used to accomplish the move of these new 386 program format files.

Thank you for your support in testing of the CS/386 board and operating system. The attached diskette represents test release "1.08", level above and beyond Release 1.0 of the CS/386 operating system. This diskette differs from Release 1.0 of the CS/386 in "@MVP" which is 815 sectors, (vs. on 1.0) and "@GENPART" which has been corrected to remember the CPU number on loading the "current" configuration. If any problems are encountered with these diskettes that are reproducible software errors please let me know as soon as possible.

Hopefully all existing software will function properly with no or minimal change. If changes are required we would like to be the first to know. Please let me know of successes and failures.

Sincerely,

Tyler B. Olsen.  
CS/2200/386 Beta site coordinator

January 25, 1990

Tyler B. Olsen  
CS/2200/386 Support  
Wang Laboratories, Inc.  
One Industrial Avenue  
Lowell, MA 01851

MS 014-890  
Tel. 508/967-0339  
Fax. 508/458-0620.

Dear Wang CS/386 user,

The enclosed diskette represents the latest test release of the CS/386 operating system software. The software represents significant improvement over what has heretofore been available with fixes to known OS problems incorporated. A summary of resolved problems over 1.04 are: all differences between VLSI 3.4. and CS/386; SELECT ON ALERT; PRINTUSING not in right place; \$DISCONNECT ON; possible missing SF keys; workstation on/off hang. A problem in 1.06 relating to output to terminal printers (address 204) has been fixed. Additional problems have been fixed that were in 1.07 related to SELECT #16; LISTV in conjunction with undeclared globals; RENUMBER; and problems that generated an A02 or A01. We at Wang are doing more extensive testing.

Known problems with this test release are currently undetermined. We will try to notify you if we find there are any other problems. Please notify me if you have any problems.

Known problems within the support utilities. The system utilities "Move File" and "Make a Reference List of File Names" should not be used to move files saved in the new 386 program format, eg. under SELECT NEW. "Move File" will move them but not set the index flag properly; "Create a Reference File" will not find these files. The standard MOVE command can be used to accomplish the move of these new 386 program format files.

Thank you for your support in testing of the CS/386 board and operating system. The attached diskette represents test release "1.08", level above and beyond Release 1.0 of the CS/386 operating system. This diskette differs from Release 1.0 of the CS/386 in "@MVP" which is 815 sectors, (vs. on 1.0) and "@GENPART" which has been corrected to remember the CPU number on loading the "current" configuration. If any problems are encountered with these diskettes that are reproducible software errors please let me know as soon as possible.

Hopefully all existing software will function properly with no or minimal change. If changes are required we would like to be the first to know. Please let me know of successes and failures.

Sincerely,

Tyler B. Olsen.  
CS/2200/386 Beta site coordinator

January 8, 1990

Tyler B. Olsen  
CS/2200/386 Support  
Wang Laboratories, Inc.  
One Industrial Avenue  
Lowell, MA 01851

MS 014-890  
Tel. 508/967-0339  
Fax. 508/458-0620.

Dear Wang CS/386 beta site user,

The enclosed diskette represents the latest test release of the CS/386 operating system software. The software represents significant improvement over what has heretofore been available with fixes to known OS problems incorporated. A summary of resolved problems over 1.04 are: all differences between VLSI 3.4. and CS/386; SELECT ON ALERT; PRINTUSING not in right place; \$DISCONNECT ON; possible missing SF keys; workstation on/off hang. A problem in 1.06 relating to output to terminal printers (address 204) has been fixed. We at Wang are doing more extensive testing.

Known problems with this test release are. This release does have problems with RENUMBER which may bring down the OS. We will try to notify you if we find there are any other problems. Please notify me if you have any problems.

Thank you for your support in testing of the CS/386 board and operating system. The attached diskette represents test release "1.07", level above and beyond Release 1.0 of the CS/386 operating system. This diskette differs from Release 1.0 of the CS/386 in "@MVP" which is 815 sectors, (vs. on 1.0) and "@GENPART" which has been corrected to remember the CPU number on loading the "current" configuration. If any problems are encountered with these diskettes that are reproducible software errors please let me know as soon as possible.

Hopefully all existing software will function properly with no or minimal change. If changes are required we would like to be the first to know. Please let me know of successes and failures.

Sincerely,

Tyler B. Olsen.  
CS/2200/386 Beta site coordinator

Multi-User Basic-2/386 Release 1.07.

CS/386 Release 1.07. diskettes.

Diskette 1 of 2.

Index = 7' Current End = 1277 Max =1279 AP=10 AD= 7

AD = 10

. @BOOT	4	07/31/88
. @GEN.386	3	
. @GENPART	89	01/08/90 ** changed from CS/386 release 1.0
. @INSTALL	28	08/15/89
. @MENU	36	02/01/85
. @MODYSYF	15	07/17/89
. @MOVE1	40	01/23/89
. @PSTAT	13	07/26/89
. @SYSMPVB	5	08/15/89
. START	3	

AD = 7

. .STARTD	3	
. @@	56	
. @DG1	21	CS/386 Diagnostics.
. @MVP	815	CS/386 O.S. 1.07 ucode. ** changed from prior release.
. @MXEO	75	MXE microcode.
. @PM017V3	12	Printer driver for PM017.
. @SYSFILE	53	System configuration file.

Diskette 2 of 2. (same as CS/386 release 1.0)

Index = 7 Current End = 545 Max =1279 AP=12 AD= 7

AP = 12

. @BACKUP	55	01/09/89
. @CLOC	24	05/09/86
. @DAVFU	55	05/09/86
. @FORMAT	46	12/11/87
. @MOVEFIL	28	01/23/89
. @MRTIAN	70	08/15/89
. @RECOVER	54	01/09/89
. @TO.CREO	6	02/06/89
. @TO.CREF	52	02/07/89
. @TO.DISK	23	01/20/89
. @TO.SUBS	37	01/19/89
. @TOIMAGE	25	02/07/89

AD = 7

. @DATE	3	
. @DM50/V0	11	Printer driver for DM-50
. @LASRJV1	10	Printer driver for LaserJet
. @PM010V2	9	Printer driver for PM-010
. @PM016V3	9	Printer driver for PM-016
. @PM018V3	10	Printer driver for PM-018
. @PM060V0	9	Printer driver for PM-060

NOTE: If the prime surface in a DS cabinet has to service both VLSI and CS/386 systems you may want to restructure as follows:

- . Rename the CS/386 OS microcode file "@MVP" to "@386".
- . Modify "@BOOT" as follows:

```
9000 REM ! prog = @BOOT PLS 08/03/89 CS/386/VLSI
9005 REM ! COPYRIGHT WANG LABORATORIES 1985, 1986, 1989
9010 DATA "@BOOT","***** SYSTEM SOFTWARE *****",3,0
9020 DATA "@MVP","CS/2200 Multiuser BASIC-2","P"
9030 DATA "@386","CS/386 Multiuser BASIC-2","P"
9040 DATA " ',' " ',' " ',' "B"
9050 DATA "@DG","CS/2200 Diagnostics","M"
9055 DATA "@DG1","CS/386 Diagnostics","M"
9060 DATA "no more","end of menu list"
```

FILENAMES UNDERLINED  
ARE RESTRICTED TO 4  
CHARACTERS

\*\*\*\*\* SYSTEM SOFTWARE \*\*\*\*\*

Select item with SPACE & BACKSPACE

Key RUN to execute, CLEAR or PREV SCRIN for previous screen

MEMORY SIZE 8192 K

TERMINAL 1

CS/2200 Multiuser BASIC-2  
CS/386 Multiuser BASIC-2

CS/2200 Diagnostics  
CS/386 Diagnostics

CS/386 1.06

December 29, 1989

Tyler B. Olsen  
CS/2200/386 Support  
Wang Laboratories, Inc.  
One Industrial Avenue  
Lowell, MA 01851

MS 014-890  
Tel. 508/967-0339  
Fax. 508/458-0620.

Dear Wang CS/386 user,

The enclosed diskette represents the latest current release of CS/386 operating system software. I am distributing this diskette now so as to take advantage of the long holiday weekend mailing. We at Wang will be doing more extensive testing on January 2 and will try to notify you if we find there are any problems. Please notify me if you have any problems.

The software represents significant improvement over what has heretofore been available with fixes to known OS problems incorporated. A summary of resolved problems over 1.04 are: all differences between VLSI 3.4. and CS/386; SELECT ON ALERT; PRINTUSING not in right place; \$DISCONNECT ON; possible missing SF keys; workstation on/off hang.

Thank you for your support in testing of the CS/386 board and operating system. The attached diskette represents test release "1.06", level above and beyond Release 1.0 of the CS/386 operating system. This diskette differs from Release 1.0 of the CS/386 in "@MVP" which is 809 sectors, (vs. on 1.0) and "@GENPART" which has been corrected to remember the CPU number on loading the "current" configuration. If any problems are encountered with these diskettes that are reproducible software errors please let me know as soon as possible.

Hopefully all existing software will function properly with no or minimal change. If changes are required we would like to be the first to know. Please let me know of successes and failures.

Sincerely,

Tyler B. Olsen.  
CS/2200/386 Beta site coordinator

Multi-User Basic-2/386 Release 1.06.

CS/386 Release 1.06. diskettes.

Diskette 1 of 2.

Index = 7' Current End = 1274 Max =1279 AP=10 AD= 7

AD = 10

. @BOOT	4	07/31/88
. @GEN.386	3	
. @GENPART	91	09/18/89 ** changed from CS/386 release 1.0
. @INSTALL	28	08/15/89
. @MENU	36	02/01/85
. @MODYSYF	15	07/17/89
. @MOVE1	40	01/23/89
. @PSTAT	13	07/26/89
. @SYSMPB	5	08/15/89
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. @MXEO	75	MXE microcode.
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Diskette 2 of 2. (same as CS/386 release 1.0)

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. @MOVEFIL	28	01/23/89
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. @RECOVER	54	01/09/89
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9030 DATA "@386","CS/386 Multiuser BASIC-2","P"
9040 DATA " ',' ',' ','B"
9050 DATA "@DG", "CS/2200 Diagnostics","M"
9055 DATA "@DG1","CS/386 Diagnostics","M"
9060 DATA "no more","end of menu list"
```

\*\*\*\*\* SYSTEM SOFTWARE \*\*\*\*\*

Select item with SPACE & BACKSPACE

MEMORY SIZE 8192 K

Key RUN to execute, CLEAR or PREV SCRN for previous screen

TERMINAL 1

CS/2200 Multiuser BASIC-2  
CS/386 Multiuser BASIC-2

CS/2200 Diagnostics  
CS/386 Diagnostics



SPIU9004

May 18, 1990

## Using SPEED® I on Wang's CS386

There's been a lot of activity -- and confusion -- in the field in recent months regarding the use of SPEED I on Wang's CS386. It's apparent in the numerous questions we receive each week from TOM resellers, end users, hardware VARs, and various Wang reps. Until we have some more answers, we are reluctant to comment on or make public commitments to the product. Unfortunately, this attitude has led to some creative interpretations of our general intent.

We'd like to set the record straight in this *Technical Information* bulletin. It addresses the most frequently asked questions and provides some technical information which may help you.

### *Does SPEED I run on the CS386?*

SPEED I reportedly runs well overall on the CS386 in an enduser environment. The "work-arounds" distributed in October in 3.01 89-14 have been effective in curing the obvious problems that prevented a straight port of the software to the new platform.

### *What about 2.3?*

We have received information from a couple of resellers who applied similar work-arounds to 2.3 and are using them, apparently successfully, at end user sites. The work-arounds are described later.

### *Is the CS386 a better performer than the MVP or VLSI?*

Except for program load and resolve timings, BASIC-2/386 outperforms BASIC-2 in almost every category. We have heard from three sites that posting times can be halved. We know of no one who has performed controlled tests, but these results do not seem unreasonable. Last year we published some timings on the language and estimated that throughput would increase by an average of 80 per cent.

### *If the new CPU is that much better overall, why are there complaints about load timings?*

Not everyone is complaining. Some users are delighted. We think part of the problem is based on thwarted expectations. Some users have been told that the CS386 is a win-win situation. After upgrading, some trade-offs become apparent. If those compromises were presented ahead of time, and end users were allowed to make their decisions based on that foreknowledge, we think there would be a lot less commotion.

There are also reports that 386 workers are held up when another terminal is doing a program load. If so, this could be very aggravating, especially if the users are used to the VLSI.

*Why didn't Lowell tell us about these trade-offs ahead of time?*

We're not sure they knew. The language was managed by Wang Taiwan. It was a huge undertaking to rewrite BASIC-2 for the 80386 chip, and difficult for Lowell to conduct meetings with project members that were 12 hours away. Some things fell through the cracks.

*Would you recommend a 386 to a client?*

The CS386 is an attractive alternative for many users. It's mainly being used by businesses who have overpowered their MVPs, and who want to stay with Wang and keep their peripherals. There are some nice enhancements in the language, and this is obviously the direction Wang plans to take the CS.

The key here is disclosure. Tell your clients about the load times. Tell them there are still a few bugs that need to be shaken out of the OS and the hardware, and that there will be some inconveniences. Also tell them about the extra throughput, the ability to run 16 users with large partitions, and the language enhancements. Then let *your clients* decide.

*Has TOM released SPEED I on BASIC-2/386?*

No.

*Why not?*

We believe the language is still in a state where its use must be evaluated on a site-by-site basis. There are inherent risks as well as benefits in using it, and TOM is not in a position to evaluate them.

By officially endorsing the language, we also imply that we are comfortable with any existing problems or incompatibilities, that we believe we can solve them to our satisfaction, and that we have the resources and desire to do so. We further imply that our opinions of the language's stability, suitability, and author support are of a high enough quality to risk our reputations on, now and in the future. Some of these claims we cannot make.

*That's a pretty strong indictment.*

It's not meant to be. Although the department has taken a beating over the last few years, many of the people in Wang's CS Group are the same veterans who have done the great job on BASIC-2. We still believe that Wang wants to resolve any difficulties or incompatibilities that arise when upgrading from BASIC-2 to BASIC-2/386 and is actively working to do so.

Further, we understand that some of the incompatibilities are the result of design decisions that may be very difficult to change at this point, and that we may have to make code changes in SPEED I to compensate for them. We have already made a few and suspect more will be necessary.

*So what IS the problem?*

A key issue has been a question of documentation and commitment to a standard from Wang. The new language contains changes in many important areas, particularly to disk files, the disk index, and memory usage, characteristics of which many SPEED I functions are dependent on. Until recently, Wang was slow to provide information on potential incompatibilities, and we were reluctant to endorse BASIC-2/386 as long as we had to address a set of compatibility issues based on trial-and-error rather than a Wang specification.

*Have you discovered all of the compatibility issues?*

We're not sure, but we think we know about all of the important ones. We still don't have a complete list, but we're not sure one exists. To be fair, Wang has been doing a good job of compiling and documenting issues as they come up, but empirically derived information can never replace foreknowledge.

*What are the current issues?*

Most are related to changes in the internal and external formats used by the language. The new formats affect program load and resolve times, partition sizes, program size, line and statement sizes, and numeric representations.

*Language format? What changes do you mean?*

The appearance of BASIC-2 programs on disk is quite different from the *display format* that you see on the screen when you list or edit programs. BASIC-2 programs are stored on disk in an *external format* which is based on a standardized *atomization* scheme that Wang has used for nearly 20 years.

This atomization scheme not only stores programs compactly and efficiently, it is very similar to Wang's BASIC-2 *internal format*, which is what your program actually looks like when it is stored in memory and executing. Because the external and internal formats are almost identical, very little CPU time is spent converting loaded programs from one format to the other.

A modified version of the BASIC-2 internal format was adopted for BASIC-2/386. Several radical changes were made to the way variables, literals, and statement separators are atomized in a bid to improve performance.

*How does this affect load times?*

When loaded, programs must be converted from external format to internal format before they can be run. This conversion is normally performed during the LOAD statement. Programs stored in BASIC-2 external format must undergo a hefty transformation to get into the new 386 internal format, and this conversion takes up a lot more CPU time than what users experience on MVPs or VLSI CPUs.

### *How are the load times on the CS386?*

There are complaints. We have not had the same experience here. We do notice a difference, but not to the degree that some end users are experiencing. At TOM, a typical file maintenance program which takes 5 seconds to load on the VLSI takes about 7 seconds on a 386, including processing by SP LOAD. That isn't bad. But we are not an end user site. We don't have a dozen operators banging in records while a load is going on.

### *Is there a solution to the problem?*

Yes. BASIC-2/386 supports two external formats, including a new one that is very similar to the new internal format. Programs stored in this format load very quickly.

### *Can I use the new external format?*

Theoretically. There's a work-around later in this bulletin that suggests a change to SP LOAD that will allow SPEED to find the program load lines, one of the biggest problems with the new external format. If you do make the switch, bear in mind that utilities such as Program Listing, Program Compare, Search & Replace, and Verify Load Lines (and possibly others) will not work with the new format. It's also a lot of work.

### *How much work?*

It depends on how many program files you want to convert. There is no automatic procedure to take some or all of the programs on a platter and convert them to the new external format. They have to be done manually one at a time by loading in the program and resaving it. A typical SPEED I applications platter contains more than 1,000 programs. Even with help from small subroutines or text assigned to special function keys, the conversion process can take quite a while.

Some resellers have used "hybrid" installations to cut down the amount of work involved by converting only their heavily used programs, such as the SP module. BASIC-2/386 effectively deals with multi-program loads that contain a mix of programs in both formats. This option can halve the typical load time, but isn't nearly as effective as a full conversion.

### *How do you save a program in new format?*

The type of external format used is derived from a new SELECT parameter which can either be set to SELECT NEW or SELECT OLD. The current state of the parameter can be interrogated using the LIST SELECT command. To change the format of a program, it must be loaded, a SELECT NEW executed (if necessary), and then the program resaved. There are two problems with this:

First, a program file in NEW format is usually a lot bigger than a file in OLD format. That means you encounter a lot of D81 (file full) errors unless you have either taken steps ahead of time to ensure that all your program files have some extra space, or you use a freshly scratched platter.

Second, use of SELECT NEW/OLD isn't very intuitive and the status of the parameter can change implicitly. For instance, if you execute a CLEAR, it automatically changes to OLD. (You have to use CLEAR P to prevent the status change.) Old habits may be hard to break. To be safe, you may find yourself having to execute a SELECT NEW every time you save or resave a program.

### *How do I tell what external format a program is in?*

If you save a program in NEW format, the disk index is updated with a new file identifier code to reflect the change. When you display the name of the program with LIST DCT, programs saved in NEW format will be identified as P' (note the apostrophe) instead of just P.

A complication in using SELECT NEW/OLD is that programs are not automatically resaved in the same format they were in when you loaded them. After you load a program, the only clue you have as to the state of the original format is the apostrophe in a LIST DCT.

This can be misleading, especially in hybrid installations, because SPEED's file copy utilities will allow you to copy a program in one format on top of a program in the other. Further, program files created by the utility (either because they're new or won't fit in the original space) will *always* be seen as being in OLD format by LIST DCT regardless of the status of the SELECT flag or the original contents of the file. The mismatch doesn't affect your ability to run. It just means that you can never completely trust what LIST DCT says.

### *How much bigger do program files get in NEW format?*

It depends on the contents of the program and where the sector breaks occur. Programs that have a lot of variable references or non-integer constants are the most adversely affected by proportion, whereas programs with a lot of REMs can be the least.

The range can be startling. For instance, 3.01's SP '200 storage size increased from 30 to 37 sectors in NEW format, but SP '180 increased from 20 to 56!

### *If I switch to NEW format, can I use the 'wrap' option to cut down on the size of the files and the number of D81s I might encounter?*

The <W> wrap option definitely reduces the size of the program file, but SPEED currently does not support the wrap option in either NEW or OLD format. The main problem is that we have always allowed SPEED load lines to occur anywhere in a BASIC-2 program. Part of the solution might be that we insist that, like Niakwa-based systems, you make the load line the last line of your program.

The wrap option stores 'length' values in the program text that can mimic other codes, such as the one used to denote an image (%) statement. If the load line is not the last line, the only way to *reliably* separate length-codes from image codes is to read the entire program file *from the beginning*, doing a simple parse as we go. Since the main reason for using NEW format is to speed up load times, this would defeat the whole purpose of converting.

*Is the increase in storage size a reflection of increases in memory usage?*

Yes. Count on doubling your current memory requirements. As a general rule, you will need 64K partitions for SPEED 2.3 and D.A.T.A. 3500, and 128K partitions for Release 3.01 to handle the average program mix.

Exact memory requirements are difficult to determine because the amount of program expansion for individual programs or subroutines can vary considerably. Memory requirements for SPEED subroutines routinely more than double (for instance, SP '200's memory requirements increase by a factor of 2.3), but mainline programs typically do not, especially if they contain a lot of REMs. Doubling the partition size seems to be effective for the average mix of subroutines and programs that occupy memory in a SPEED application.

Don't bother creating a universal global partition, and don't get carried away with huge partition sizes either. If you make the partition too large, it has been reported that some programs will error out because computed subscripts exceed legal values.

*We are using D.A.T.A. 3500 on the CS386. WP does a lot of program overlays during a document editing session. Can we convert these overlays to NEW format to reduce the time required to load and resolve them?*

Not without a program change (described later on). WP attempts to locate all of its overlays during the startup to cut down the time it takes to load them later on. If they're saved in NEW format, WP can't find them because of a new program file identifier in the disk index that is associated with programs saved in NEW format.

*Does the new identifier affect SPEED?*

Most of SPEED's logic does *not* check for program identifiers. It checks for *data file* identifiers and assumes it is dealing with a program if the check fails. Although we have not made a thorough search of all the programs in 2.3, 3.01, and their support modules, most programs are apparently immune to the change. The new Compress Platter utility distributed for 3.01 in 90-01 was designed with the new program identifier in mind.

*Are there any other considerations?*

Earlier, it was mentioned that programs in NEW format require more memory and more disk storage. It's also true that statements assigned to a line number grow, sometimes to the point that they no longer fit on the line. If this happens, the line must be split into two different lines before the program can be saved.

One reseller maintaining a hybrid system reports that he had to split one or more lines in "about a dozen" SPEED subroutines, and that some of them required renumbering as a result.

Coupled with keeping track of NEW and OLD formats on the same machine, you will have to decide if the complications of maintaining subroutines that no longer match the program compares that TOM sends out in Revision documentation is worth the effort.

*I've heard that most programs wouldn't match anyway, that the CS386 makes some modifications to programs all by itself. Is this true?*

Yes, but the problem isn't severe, and certainly isn't as dramatic as some of the transformations programs can go through when compiled with Niakwa's B2C. The biggest change is the way BASIC-2/386 handles numeric literals. It converts them to one of two internal formats, and in the process, loses track of the original representation of the number. When the program is then listed (or saved in OLD format), the number is "reconstituted" to a presentable form, which is not necessarily the same as what you entered.

The difference is, if you call TOM's Tech Support Group, this type of program text inconsistency is much easier to deal with than a renumbered SPEED subroutine. ("You say you got a P57 where??")

*I've heard that the changes in numeric literals sometimes cause problems.*

True. The current algorithm reconstructs numbers into their PRINT format. The number of characters required to represent the number sometimes changes. With scientific notation, the change is dramatic. For instance, some TOM accounting applications make use of the number 1E-80 in divisors to prevent math errors. In BASIC-2/386, this number is transmuted to 1.000000000E-80 and it *cannot be altered*. If the extra bytes blow out your line length causing an A05, you will have no alternative but to split the line, even though you have made no changes to the code and have not attempted to convert to NEW format. In other words, it's possible to load a BASIC-2 program, do nothing, and not be able to resave it.

*What kind of technical support can you give us if we install a CS386?*

Until we formally release on the new language, our support will be limited. We have a 386 CPU board but it must share time with the VLSI board that normally inhabits our CS. We install the new CPU for a day or so a couple of times a month to resolve 386 issues.

In our environment, we work with and update our software master copies of SPEED, D.A.T.A. 3500, and the Applications every day. It's important that these master copies remain pristine and standardized on BASIC-2. Everybody counts on that, including Niakwa. We cannot afford to have unexpected or 386-specific changes sneak into any of our programs. Consequently, the 386 spends a lot of time on the shelf.

*If I come up with some solutions to some of the problems and send them to you, will you put them in SPEED so I don't have to make the changes every time you send out a Revision?*

We will gratefully accept the information. We will consider making changes that are relatively innocuous. In general, we resist attempting to solve another organization's problem by making a change to SPEED. We would rather help or encourage that organization to make the proper correction, even if it takes longer. "Temporary" work-arounds often end up having to be supported in our code for years after the problem they were meant to solve has ceased to exist. They gum up the works. SPEED needs to be *lean and mean*.

## Running Release 3.01 with BASIC-2/386

The following procedures have been shown to bypass certain compatibility problems that arise when using Release 3.01 with BASIC-2/386.

1. Make sure you have Revision 5.01 of the Registration 5 software. The revision number is displayed on the first startup screen. Without this revision, the startup programs will refuse to run with BASIC-2/386.
2. Make sure you have the latest revision of SPEED I. Recent revisions have incorporated code to make transitions to BASIC-2/386 much easier. At this writing, you should be using Revision 90-01 of 3.01.

These two revisions solve all reported compatibility problems in the SP module that prevent SPEED from running when using OLD external format. Compatibility issues in other modules will be addressed in future revisions of the software.

To use programs in NEW format, you must:

1. Make sure that the image statement "load line" in all of your applications programs is the last line of your program. If it is not, SP LOAD may not find the load line or may find only a portion of it.
2. Modify line 8320 of SP LOAD. After the statement  
Q=POS(Q\$)=Q95)  
add  
IF US(1)="W" THEN Q=256.

Bear in mind that several SPEED I utilities, such as Verify Load Lines, Program Listing, Program Compare, and Search & Replace will not work with NEW format.

## Running D.A.T.A. 3500 with BASIC-2/386

D.A.T.A. 3500 is apparently running successfully under BASIC-2/386 with very few problems.

### Running in OLD Format

A problem was reported with a \$GIO in WP 425 3 in early releases of BASIC-2/386. The statement causes a hard error when executed. If you encounter this error, REM out the \$GIO statement. The only effect will be the loss of printer timeout sensing.

### Running in NEW Format

A problem occurs in WP 010 1 because of the new disk index identifiers used for programs stored in NEW format. If you intend to use new format, change the last statement of line 560 of WP 010 1 from

```
IF STR(R1$( ),Q1,2)<>HEX(1080) THEN 580
```

to

```
IF STR(R1$( ),Q1,1)<>HEX(10) OR STR(R1$( ),Q1+1,1)=HEX(00) THEN 580
```



## Running SPEED I Release 2.3 with BASIC-2/386

The following changes were reported by a TOM reseller who reports he has successfully adapted Release 2.3 to run with Wang's BASIC-2/386.

1. SP CVR 2  
On line 8060 after  
    U1(3)=SPACE-300  
insert  
    IF U\$(1)="W" THEN U1(3)=U1(3)/2
2. SP MENU  
Add the following statement to the end of line 8670  
    IF U\$(1)="W" THEN 8700
3. SP RSW 1  
If you want background capability, you must change a statement on line 8030. Change  
    IF U\$(1)<>"M" THEN 8040  
to read  
    IF POS("MW"=U\$(1))=0 THEN 8040

To run with NEW format, update line 8120 of SP LOAD (and SP LOADW) with the same change documented for line 8320 of SP LOAD in Release 3.01. The same admonitions regarding placement of load lines and incompatibilities in utility programs also holds true for 2.3.

Package Subject: DATA 3500

Item Title: DATA 3500

I spoke with the customer at the beginning of this week. He had then got so far so he was able to start DATA3500. But he could no create or edit any document. Then I spoke to him yesterday the 7th. He had then manage with help from his softwarehouse (in Sweden) to solve the problem so he also could edit and create documents. (He had tried to get help from NSG but he did not get any response from they so far.) The customer should verify the functions in DATA3500 the next comming days. So hopefully everything will work out find. I will be in contact with the customer next week. Thats the status for the moment.

Have a nice weekend.

Anders

----- S V A R -----  
Till Anders Backner Fran: Mike Bahia  
Ärende: DATA 3500 Avsant: 96-03-06

Anders,

You may have already told me but I thought I would check anyway w/ you that the customer did get the DATA 3500 problem resolved. My recollection was someone in Europe had the fixes for you. Have the problems been corrected?

Regards, Mike

----- Reply -----  
To: Mike Bahia From: Anders Backner  
Subject: DATA 3500 Date Sent: 02/08/96

Thanks for your help and concern. I will keep you updated.

Anders

----- S V A R -----  
Till Anders Backner Fran: Mike Bahia  
Ärende: DATA 3500 Avsant: 96-02-07

Anders,

I talked to Bob at Northwest Source Group. He is awaiting approval from his management. They also need to touch base with their international representative. Bob told me he should have approval by Friday though there is no guarantee and he said he would send a FAX Friday. Once approved, they should be able to fix the problem within a week & get it out to you. Let him know the customer is getting quite frustrated & hopefully he'll respond.

Package Subject: DATA 3500

Regards, Mike

----- Reply -----

CC: Mike Bahia  
Subject: DATA 3500

From: Mike Bahia  
Date Sent: 02/07/96

Anders,

Will give them a call later this morning & let you know what I hear.  
We've had a cold spell too we are just thawing out from.

Mike

----- Original Memo -----

To: Mike Bahia  
Subject: DATA 3500

From: Anders Backner  
Date Sent: 02/07/96

Mike,

I am wondering if you have any contact with the Northwest Source Group and could help us speed up a solution for the problem the customer has run into.

I will fax you a copy of the problem that the customer faxed on Monday 29th. He have not heard anything since then.

I spoke to Bob Lease at the NSG yesterday and he promised that he would send me a fax yesterday with a time schedule but I have not received any fax today. I know that this is a old product but the customer is beginning to be frustrated.

If you know some one at NSG we would appreciate if you could get in touch with them.

Thanks in advance!

Anders

P.S It is rather cold here for the moment -15 to -23 degrees Celsius below zero. D.S

## BASIC 2/386 O/S REL 1.0

IN TESTING THIS O/S FOUND 2 PROBLEMS.

1. UNABLE TO RUN MULTI-DISK DIAG VER 64A5. GET MESSAGE "CPU S/W MUST BE UPGRADED TO RUN THIS PROG".

Diags ARE IMPORTANT FOR TESTING DISK DRIVES ON 2200.  
NEED FIX, WORKAROUND, OR CIRCUMVENTION.

2. FAILED RUNNING GAME EMRTIAN ~~VER~~ REL 2.6 WITH ERROR S!P ON LINE 3270. THIS MAY BE NORMAL. DUE TO THE <sup>AGE</sup> ~~DATE~~ OF THE VER.

THE EMRTIAN ON THE 386 REL 1 O/S RUNS FINE.

WOULD ADVISE POSSIBLY GETTING DUANE FRANZ TO ALSO <sup>TEST.</sup> ~~CHECK~~ ~~DO~~ ~~FOR~~  
RAN SOME OF THE DIRS FOR THE CPU + SYSTEM + TESTED SEVERAL OF  
THE COMMON UTILITIES WITHOUT FAILURE.

*1/2/82*

SELECTION CRITERIA

-----  
PTR NUMBER - START: C510002919 END: C510002919  
PRIORITY: ALL  
PROBLEM TYPE: ALL  
RDB - ASSIGN RDB: ALL CUST RDB: ALL ORIG RDB: ALL  
HW/SW INDICATOR: ALL  
STATUS TYPE: 0  
STATUS CODE: ALL  
-----

PROBLEM NUMBER: C510002919 CUST NAME: WATRA CHURCH GOODS COMPANY  
PRIORITY P2 CUST NUMBER: 00 00001127919  
CUST RDB: 3686

PROBLEM TYPE: ESC CUST CONTACT: JOHNNY JONES  
PRODUCT PROB NO: NOT LINKED CUST CONT PHONE: -312-606-8622  
CUST ADDRESS 1: 2850 W CERMAK RD  
CUST ADDRESS 2:  
CUST ADDRESS 3:  
SYSTEM MODEL NO: CS-386 CUST CITY: CHICAGO  
GEN SYST MODEL: CS 386 CUST ST/PROV: IL  
O. S. VERSION: 01 00 00 CUST ZIP: 60623-0000  
HW MODEL NUMBER: CS-386 CUST COUNTRY:

SW MODEL NUMBER: OS RDB ASSIGNED: 8760  
SW VERSION: PERSON ASSIGNED: BAHIA MICHAEL E  
PART NUMBER: ORIG NAME: LOPER GARY  
PART NUM REV: ORIG PHONE: - - -

CALL TRKG DATE: 00/00/00 NETWORKED: N  
CALL TRKG NO: RES DEPLOYED: DTSE  
ORG ACT/SYM/ACN: DATE ENTER PTR: 10/20/89  
STATUS DATE: 10/20/89 DATE TO R&D:  
STATUS CODE: H 0 495 WKDYS IN R&D:  
STATUS ABBREV: NEW PROBLM TOT WKDYS OPEN: 10.08

PROBLEM SUMMARY :LOPER GARY DATE: 10/20/89 TIME: 16:01  
After upgrading a CS to the new CS-386, the TOM's software programs are getting error A02's.

ASSIGNED: LOPER GARY DATE: 11/02/89 TIME: 16:25  
Mike, Talked to Riley and he explained things. Didn't realize that the CS-386 requires twice as much memory as a VLSI CPU. Without manuals, it's hard to figure some of these out. O.K. to close this one. Please send it back to us at RDB 3670. Thanks for you involvement. Gary

ASSIGNED: LOPER GARY DATE: 11/02/89 TIME: 14:43  
I guess that Mike Riley has all ready spoken to the vendor on this one. I have not been on the site myself, and possibly do not know all the specifics relating to this case. I have left Mike Riley a message to contact me and let me know more about it. We have only a TSB here that describes the CS-386 but no other documentation. I will update after I hear from Mike.

PROBLEM NUMBER: C510002919  
PRIORITY P2

CUST NAME:  
CUST NUMBER:  
CUST RDB:

WATRA CHURCH GOODS COMPANY  
00 00001127919  
3686

Has the system been partitioned the exact same way for both the CS brd & the 386 brd. Should bring a Wang virgin O/S 3.3 & Wang virgin 386 1.0 O/S back to site & verify O/S is not problem. If using a cust O/S either the old or new or both could be altered & we need to insure that is not the reason the problem does or doesn't exist. This should be done when the Pl'd 386 brd is brought to site & tried & if it fails.

ASSIGNED: LOPER GARY DATE: 10/26/89 TIME: 10:29  
The problem is consistent. Some programs do run, others fail at the same point each time. The programs still run fine using the 8937. (NOTE: this was an upgrade from the 8937 to the 386 bd.) The programmer says he is having a new copy of the OS sent and will be there on Monday 10/30. We will have more info for you then.

ASSIGNED: BAHIA MICHAEL E DATE: 10/24/89 TIME: 10:04  
NEED TO KNOW IF PROBLEM IS CONSISTENT & COMES UP THE SAME PLACE & TIME EA TIME & IF THE 8937 WAS TRIED AFTER THE PROBLEM STARTED. IF SOMETHING OCCURRED THAT DAMAGED THE S/W THE PROGRAM COULD FAIL EVERY TIME UNTIL IT IS FIXED. REPLACING THE 386 BRD MAY NOT FIX IT IF THE S/W IS DAMAGED. NEED TO VERIFY S/W IS STILL GOOD IF 386 BRD DOES NOT FIX BY RUNNING S/W ON 8937.

ASSIGNED: LOPER GARY DATE: 10/24/89 TIME: 08:17  
New board still not rec'd. 8937 board runs the old programs O.K. Also the new CS-386 board will run the programs if the partition is set to 200K. (?) I personally haven't seen this, but this is what the CE and programmer say. Will update you as soon as the new CS-386 arrives and is tried. Gary

ASSIGNED: BAHIA MICHAEL E DATE: 10/23/89 TIME: 13:49  
OBVIOUSLY NEED TO TRY BRD. IF PROB CAN BE REPRODUCED W/OUT TOO MUCH DIFFICULTY WANT YOU TO BRING A 210-8937 BRD TO SITE WHEN NEW 386 BRD RCV'D. IF NEW 386 BRD DOES NOT FIX PROB TRY THE 210-8937. WILL NEED TO HAVE STANDARD O/S TO USE 8937 BRD. THIS WILL VERIFY CUST S/W STILL GOOD.

ASSIGNED: LOPER GARY DATE: 10/20/89 TIME: 16:14  
The CS-386 board was ordered and came from manufacturing DOA. The mother-daughter board was separated to try to fix the other, but the same problem exists. Diagnostics pass. When the A02 error occurs "END" shows about 2K left, but these are programs that used to work fine. Another CS-386 board has been ordered (212-7129-A).

Run TOMs software programs in 56k partitions which worked as a CS unit.

RESOLUTION TEXT :BAHIA MICHAEL E DATE: 11/06/89 TIME: 15:04  
HC789. When going from a standard 2200 to a 386 brd, more program space is required for each program as variables now can take up up to 8 times as much space. As a safe rule of thumb twice the partition size should be used when upgrading to a 386 board. The memory required could vary w/ each program so at sites where memory is at a premium programs should be tested to determine there memory requirements. De-escalating call to be closed /District. Cust increased partition size & working fine.

To: Gene Schulz  
From: Michael Riley  
Date: August 14, 1991  
Subj: BASIC-2 Enhancements

Enhancements of Release 2.0 for C5/386 & Turbo 1.0

1. GOSUB' integer ..... DEFFN' integer .....  
Change integer Range (0 -- 255) to Range (0 -- 65535)
2. LIMITS T(file#,) filename, start, end, used (,status)  
Change to LIMITS T (file#,) filename, start, end, used, (,status)  
(,hash-sector) (,index-type)
3. COM and DIM  
Change 1-dimension arrays from Range (1 -- 65535) to (1 -- 65535\*65535)  
Change 2-dimension arrays from Range (1 -- 255) to (1 -- 65535)
4. MAT MERGE ..... for two byte length Locator-Array.  
MAT SORT ..... (Dimensions under 65535)  
MAT MOVE .....  
  
MAT MERGE ! ... for four byte length Locator-Array.  
MAT SORT ! .... (Dimensions under 65535\*65535)  
MAT MOVE ! ....  
  
MAT SEARCH .... for two byte length pointer-variable.  
(Dimensions under 65535)  
  
MAT SEARCH ! .. for four byte length pointer-variable.  
(Dimensions under 65535\*65535)
5. LIST SELECT... for listing all the SELECT variables
6. SCRATCH DISK ' ... for index type 1  
  
SCRATCH DISK & ... for index type 2 (Three byte addressing)  
(Change index size from Range (1 -- 255) to (1 -- 65535) and sector from Range (1 -- 65535) to (1 -- 65535\*256))

1.   SELECT H ON                           for platter hog switch on  
      SELECT H OFF                       for platter hog switch off)
2.   SELECT 3 ON                         for three byte addressing switch on  
      SELECT 3 OFF                       for three byte addressing switch off
3.   SELECT T ON                         for Date and Time put on File switch on  
      SELECT T OFF                       for Date and Time put on File switch off
4.   PRINT #CPU                          CPU number printout that got from @GENPART  
      PRINT #VERSION                    O/S VERSION
5.   \$ROTATE (alpha-variable,numeric-1,numeric-2,(-)numeric-3)

Alpha-variable	= String that to be byte rotated
numeric-1	= Starting pointer of Rotated Range of string
numeric-2	= Ending pointer of Rotated Range of string
(-)	= Right rotate and none for Left rotate
numeric-3	= Rotate count

The data file format is 8 bytes for program name.  
6 bytes for line number.  
2 bytes for error type.



7. \$COPY Alpha-1 (num-1,num2,num3) TO alpha-2 (num-4,num-5,num-6) REPEAT num-7

Where:

Alpha-1 = Alpha variable for string of COPY from  
Num-1 = Numeric variable for start position  
Num-2 = Numeric variable for field length  
Num-3 = Numeric variable for skip length  
Alpha-2 = Alpha variable for string of COPY to  
Num-4 = Numeric variable for start position  
Num-5 = Numeric variable for field length  
Num-6 = Numeric variable for skip length  
Num-7 = Numeric variable for repeat count(OPTION)

★ WILL REQUIRE UPDATED PC2200 EMULATOR OR 2636DW

★ 8. SCREEN READ (T#) alpha-variable For Turbo high speed reading from  
a Terminal port.

Where:

If T# is entered, then the alpha-variable is the name of a opened data  
file at device address T# that the data will go.

If T# is not entered, then the alpha-variable is an array to where  
the data is sent.

★ 9. SCREEN WRITE (T#) alpha-variable For Turbo high speed writing  
to a terminal port.

Where:

If T# is entered, then the alpha-variable is an opened disk file at  
T# from where the data will be transferred to the terminal port..

If T# is not entered, then the alpha-variable is an array that will  
be transferred to the terminal port.

★ 10. SCREEN STATUS alpha-variable For Turbo Screen status from a  
2636DW or PC2200 emulation.

Where:

aa= Row offset  
bb= Column offset  
cc= Total window rows  
dd= Total window columns  
ee= Cursor row count  
ff= Cursor column count  
gg= Cursor attribute  
hh= Page number

★ 11. SELECT WIDTH xx For setting MXF width count for windowing.

★ 12. Windowing and paging commands for the 2636DW Terminal (When released) and  
the new PC2200 emulation.

SET WINDOW  
JUMP TO PAGE (1 to 4)  
COPY TO PAGE  
CLOSE WINDOW

\$CLEAR21x CLEARS PRINTER BUFFER ON 22011-MS.

REM %% - ALLOWS YOU TO EXECUTE FOLLOWING COMMAND ON 386 CPU'S BUT IGNORE  
ON NON-386 CPU'S.

Wang Laboratories, Inc.

To: CS/2200/386 file  
From: TBO  
Date: March 14, 1990..

Re: Description of CS/2200/386 disk catalog area stored program file structure.

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WANG LABORATORIES, INC.

One Industrial Avenue, Lowell, MA 01851 TEL. (508) 459-5000, Telex 172108.

Re: Description of CS/2200/386 disk catalog area stored program file structure.

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NEW INDEX STRUCTURE AVAILABLE w/ O/S 2.5

WHERE BYTE  $\phi\phi$  OF SECTOR  $\phi = 01$

INDEX SECTORS = 9  
END CATALOG AREA = 4139  
CURRENT END = 4132

SECTOR  $\phi$  01 | 09 | 1025 | 1026  
INDEX INDEX START END OF  
TYPE SECTORS ADDR CATALOG  
NEW 9:9 = 4133 = 4140

3 BYTE ADDRESSING SCRATCH DISK ST/Dxx, END = X

WHERE BYTE  $\phi\phi$  OF SECTOR  $\phi = 02$

01 + 02 = = # OF INDEX SECTORS  
3, 4, + 5 = START ADDRESS  
5, 6, + 7 = END ADDRESS

INDEX SECTORS: 000000248 | SECTOR  $\phi$   
END CAT AREA: 00004000  
CURRENT END: 00000023

02 | 00 18 | 00 00 18 | 00 OF A | 00 00 00  
INDEX INDEX START ADDRESS END OF CATALOG  
TYPE SECTORS  
02: 18 hex = 18 hex = 24 FA1: 4001  
3 BYTES 24 SECTOR 23 SECTOR 4000

Catalog index area: contained beginning in disk sector 0.

Disk sector 0 Bytes 0-15.

.0.1 .2.3 .4.5 .6.7 .8.9 .A.B .C.D .E.F

example: 0146 448F FE00 0000 0000 0000 0000 0000

on D31 index sectors = 70' end cat.area =65023 Current end =17550

where byte 00 is the index type

00 = old index structure eg. default ORIGINAL INDEX STRUCTURE

01 = new index structure eg. ' hash. IMPROVED INDEX STRUCTURE AVAILABLE w/ O/S 2.5

byte 01 is number of index sectors (binary count 01-FF).

bytes 02-03 are 2 byte binary pointer to Current end + 1.

bytes 04-05 are 2 byte binary pointer to End of the catalog area + 1.

bytes 06-15 are set 00 (currently undefined).

The remainder of the catalog area is divided into 16 byte file items.

.0.1 .2.3 .4.5 .6.7 .8.9 .A.B .C.D .E.F

example: 1080 00FA 00FF 0000 544C 5853 5441 5254

Active Program "TLXSTART" on disk at 250 - 255

where byte 00 is file status.

00 = unassigned.

10 = active

11 = scratched

21 = re-used scratch entry.

byte 01 is file type.

00 = data file.

80 = program file, "old" format. i.e. MVP

40 = program file, "new" format, i.e. 386.

bytes 02-03 are 2 byte binary pointer to file START address.

bytes 04-05 are 2 byte binary pointer to file END address.

bytes 06-07 are set 0000 (currently undefined).

bytes 08-15 are the file name in ascii.

## INDEX CATALOG

## Hashing algorithms:

"The new index structure uses a more efficient hashing algorithm for locating files in the index, resulting in a more even distribution of file entries. Additionally, if an index sector is full, the system enters a new file into the next higher sector rather than the next lower, as is done with the old index. "

Access to the new Disk Index ( from SRN for MVP Release 2.5.)

The following program simulates the new disk index hashing:

```

100 N$=F$:REM F$ contains the name of the file to be entered.
110 X$=HEX(00)
120 FOR I=1 TO 8
130 X1$=STR(N$,I,1):REM X1$ contains Ith byte of the file name
140 IF MOD(I,2)=0 THEN 160
150 ROTATE (X1$,4) : REM. Exchange upper/lower nibbles of odd bytes
160 X$=X$ ADD X1$ : REM X$ contains sum of all bytes
170 NEXT I
180 S = MOD(VAL(X$),C):REM C contains the number of index sectors.
190 REM S contains the sector number into which the entry should go.

```

# Hashing algorithms:

Page-3

The following program allows access to either the old or the new index algorithm.

0010 DIM Z9\$(16)16,A\$80,B\$1

Modified 3/13/90.

```

6500 DEFFN'229(Z9,STR(A$,1,8))      # ref,  FileName
      : DATA LOAD BA T #Z9,(0,Z3)Z9$()  Read cat sector zero
      : Z4=VAL(STR(Z9$(),2,1))           Z4=
      : STR(A$,9,8)=STR(A$,1,8)         Set file name into w/a
      : ON POS(HEX(00 01)=STR(Z9$(),,1))GOSUB 6770,6800  go do hashing logic.
      : Z5=Z3                           Set should be hash sector in index.
      : IF Z3=0 THEN 6630                avoid duplicate read of sector 0.
6620 DATA LOAD BA T #Z9,(Z3,Z8)Z9$()  Read index sector.
6630 Z6=0
      : FOR Z7=1 TO 16
      : IF Z3 <> 0 THEN 6680
      : IF Z7=1 THEN Z7=2
6680 B$=STR(Z9$(Z7),,1)
      : ON POS(HEX(00 10 11)=B$)GOTO 6740,6720,6720
      : GOTO 6750

```

6720 IF STR(Z9\$(Z7),9,8) <> STR(A\$,1,8) THEN 6750

: Z6=Z7

6740 Z7=16

6750 NEXT Z7

```

      : IF B$=HEX(00) THEN RETURN
      : IF Z6 <> 0 THEN RETURN
      : B$=HEX(00)
      : IF V9 <> 0 THEN 6760
      : Z3=Z3-1
      : IF Z3=Z5 THEN RETURN
      : IF Z3<0 THEN Z3=Z4-1
      : GOTO 6620

```

6760 Z3=MOD(Z3+1,Z4)

```

      : IF Z3<>Z5 THEN 6620
      : RETURN

```

6770 XOR(STR(A\$,10,7),STR(A\$,9,8))

Old method hash logic.

```

      : B$=STR(A$,16,1)
      : STR(A$,18,2)=HEX(00 00)
      : ADDC(STR(A$,18,2),B$)
      : ADDC(STR(A$,18,2),B$)
      : ADDC(STR(A$,18,2),B$)
      : ADD(STR(A$,18,1),STR(A$,19,1))
      : Z3=VAL(STR(A$,18,2))
      : Z3=Z3-INT(Z3/Z4)*Z4
      : RETURN

```

6800 STR(A\$,18,1)=HEX(00)

New method hash logic.

```

      : FOR Z5=9 TO 16
      : IF MOD(Z5,2)>0 THEN ROTATE(STR(A$,Z5,1),4)
      : STR(A$,18,1)=STR(A$,18,1) ADD STR(A$,Z5,1)
      : NEXT Z5
      : Z3=MOD(VAL(STR(A$,18,1)),Z4)
      : RETURN

```

Storage of CS/2200/386 program files on disk media is as follows:

1. an item in the disk catalog index area, described on prior pages.
2. A program file stored on contiguous sectors within the disk catalog area.
  - a. Header block - one sector at the beginning of the file.
  - b. Program record blocks.
  - c. Trailer block - one sector at the end of the file.
  - d. End of File block - written at the maximum numbered sector.

### Header block.

Byte 001 - 001 ( 1 byte ) = 40 Program file, VLSI normal or wrap mode .  
 Byte 001 - 001 ( 1 byte ) = 50 Program file, VLSI scrambled mode.  
 Byte 001 - 001 ( 1 byte ) = 60 Program file, 386 normal or wrap mode .  
 Byte 001 - 001 ( 1 byte ) = 70 Program file, 386 scrambled mode .

Bytes 002 - 009 ( 8 bytes ) FileName 1-8 ASCII characters with trailing spaces  
 Byte 010 - 010 ( 1 byte ) = FD  
 Bytes 011-256 undefined usually 00.

### Program record blocks.

The content of program record blocks differs according to the program SAVE or RESAVE method. Details of each storage method method are detailed on the following pages.

#### Program trailer blocks.

The content of program trailer blocks differs according to the program SAVE or RESAVE method. Details of each storage method method are detailed on the following pages.

#### End of file block.

The End of File block is written in the maximum numbered sector of the assigned file space. The format is:

20xx yy followed by all hex 00's.

A program file may, on option, be saved with a Date /Time stamp of the form:.

20xx yy00 0000 0001 2033 2D31 342D 3930 ..... 3-14-90  
 2031 323A 3031 0000 0000 0000 0000 0000 12:01.....  
 followed by all hex 00's.

### Selecting the option Date/Time stamping of program files.

With CS/386 release 1.0B and greater program files have the option of being written with a Date/Time stamp. A statement of the form :

SELECT T OFF      deactivates writing/listing the Date/Time stamp.  
 SELECT T ON        activates writing/listing the Date/Time stamp.

The default for the Date/Time stamp is the SELECT T OFF condition.

Method invoked by default mode, or "SELECT OLD" followed by SAVE or RESAVE.  
The "text line" content is a combination of textatoms and ascii text, refer to the table "BASIC-2 Verb atoms".

### .MVP normal mode -- program sectors.

<u>40</u> <u>FileName</u> <u>FD</u> <u>00</u> ... <u>00</u>	Header record
<u>00</u> <u>FF</u> <u>hhhh</u> text line <u>OD</u> <u>0000</u>	Program record
<u>FF</u> <u>hhhh</u> text line <u>OD</u> <u>0000</u>	

...  
BASIC-2 text atom tables.

<u>FF</u> <u>hhhh</u> text line <u>OD</u> <u>0000</u> <u>FD</u>	
<u>00</u> <u>FF</u> <u>hhhh</u> text line <u>OD</u> <u>0000</u>	Program record
<u>FF</u> <u>hhhh</u> text line <u>OD</u> <u>0000</u>	
...	
<u>FF</u> <u>hhhh</u> text line <u>OD</u> <u>0000</u> <u>FD</u>	
<u>20</u> <u>FF</u> <u>hhhh</u> text line <u>OD</u> <u>0000</u>	Trailer record
<u>FF</u> <u>hhhh</u> text line <u>OD</u> <u>0000</u>	
...	
<u>FF</u> <u>hhhh</u> text line <u>OD</u> <u>0000</u> <u>FE</u>	

### .MVP wrap mode -- program sectors.

<u>40</u> <u>FileName</u> <u>FD</u> <u>00</u> ... <u>00</u>	Header record
<u>00</u> <u>FF</u> <u>aa</u> <u>FFAO</u> <u>bbbb</u>	
cc hhhh text line statement	
cc hhhh text line statement	
<u>00</u> <u>FF</u> continued text line statement	
cc hhhh text line statement	
<u>20</u> <u>FF</u> continued text line statement	
cc hhhh text line statement	

where aa is one byte checksum (ADDC) calculation.  
bbbb is two byte undefined value.  
cc is one byte binary count of bytes in numbered statement line.

Method invoked by "SELECT NEW" followed by SAVE or RESAVE.

The "text line" content is a combination of textatoms and ascii text, refer to the table "BASIC-2 Verb atoms".

### .386 normal mode -- program sectors.

60	FileName	FD	00	...	00	Header record
00	FF	hhhh	text line	OD	0000	Program record
	FF	hhhh	text line	OD	0000	
	...					
	FF	hhhh	text line	OD	0000	FD
00	FF	hhhh	text line	OD	0000	Program record
	FF	hhhh	text line	OD	0000	
	...					
	FF	hhhh	text line	OD	0000	FD
20	FF	hhhh	text line	OD	0000	Trailer record
	FF	hhhh	text line	OD	0000	
	...					
	FF	hhhh	text line	OD	0000	FE

### .386 wrap mode.

60	FileName	FD	00	...	00	Header record
00	FF	aa	FFAO	bbbb		
		cc	hhhh	text line	statement	
		cc	hhhh	text line	statement	
00	FF	aa	continued text line	statement		
		cc	hhhh	text line	statement	
20	FF	aa	continued text line	statement		
		cc	hhhh	text line	statement	

where aa is one byte checksum (ADDC) calculation.  
 bbbb is two byte undefined value.  
 cc is one byte binary count of bytes in numbered statement line.

### New CS/386 format changes:

The new format we have put in the CS/386 is fairly simple:

- 1) an indicator of the file in the disk catalog tells what the format is:  
 index item for the file denoted by : 1040  
 this is displayed on program LIST DCT as TYPE P'  
 refer also to the index catalog item. line
- 2). New representation for variables and constants. No text atoms have been changed or added.
 

a) 7C XX	A constant less than 256.
b) 7D XX XX	A MAT variable
c) 7E XX XX XX XX XX XX XX XX	A constant greater than or equal 256.
d) 7F XX XX	A variable

\*\* Be careful, not all 7C/7D/7E/7F encountered are the leading bytes of the new structure; it is context sensitive.



80=LIST	81=CLEAR	82=RUN	83=RENUMBER
84=CONTINUE	85=SAVE	86=LIMITS	87=COPY
88=KEYIN	89=DSKIP	8A=AND	8B=OR
8C=XOR	8D=TEMP	8E=DISK	8F=TAPE
90=TRACE	91=LET	92=FIX(	93=DIM
94=CONTINUE	95=STOP	96=END	97=DATA
98=READ	99=INPUT	9A=GOSUB	9B=RETURN
9C=GOTO	9D=NEXT	9E=FOR	9F=IF
A0=PRINT	A1=LOAD	A2=REM	A3=RESTORE
A4=PLOT	A5=SELECT	A6=COM	A7=PRINTUSING
A8=MAT	A9=REWIND	AA=SKIP	AB=BACKSPACE
AC=SCRATCH	AD=MOVE	AE=CONVERT	AF=PIOT
B0= STEP	B1= THEN	B2= TO	B3=BEG
B4=OPEN	B5=CI	B6=R	B7=D
B8=CO	B9=LGT(	BA=OFF	BB=DBACKSPACE
BC=VERIFY	BD=DA	BE=BA	BF=DC
CO=FN	C1=ABS(	C2=SQR(	C3=COS(
C4=EXP(	C5=INT(	C6=LOG(	C7=SIN(
C8=SGN(	C9=RND(	CA=TAN(	CB=ARC
CC=#PI	CD=TAB(	CE=DEFFN	CF=TAN(
DO=SIN(	D1=COS(	D2=HEX(	D3=STR(
D4=ATN(	D5=LEN(	D6=RE	D7=#
D8=%	D9=P	DA=BT	DB=G
DC=VAL(	DD=NUM(	DE=BIN(	DF=POS(
EO=LS=	E1=ALL	E2=PACK	E3=CLOSE
E4=INIT	E5=HEX	E6=UNPACK	E7=BOOL
E8=ADD	E9=ROTATE	EA=\$	EB=ERROR
EC=ERR	ED=DAC	EE=DSC	EF=SUB
FO=LINPUT	F1=VER(	F2=ELSE	F3=SPACE
F4=ROUND	F5=AT(	F6=HEXOF(	F7=MAX(
F8=TIME	F9=MOD(	FA=DATE	FB=TIME

Values FC - FF are reserved.

FC=

FD= used as end of data marker in each program sector on disk.

FE = used as end of file marker in last program sector on disk.

FF = used with hhhh designation to denote line number reference FFhhhh.

An example:

BASIC code    1125 GOTO    2000  
on disk is: 0D 0000 FF11 259C FF20 000D.  
grouped is: 0D 0000 FF1125    9C FF2000 0D.  
meaning    cr thread    25 GOTO    2000 cr

Analysis of sample program using "OLD", ie MVP and "NEW" ie. 386 formats.

Program text --

```
10 REM .
20 PRINTUSING 3500,A$,B$,C$,A1,3*A,45/B*D1
3500 % ##### # $###,###.## ###,### LAST FIELD
```

"OLD" form disk dump -

```
40 O L D          FD
20FF 0010 A22E OD00 00FF 0020 A7FF 3500.2C41 242C 4224 2C43 242C 4131 2C33 2A41
2C34 352F 422A 4431 OD00 00FF 3500 D820.2323 2323 2320 2023 2323 2323 2023 2024
2323 232C 2323 232E 2323 2020 2023 2323.2C23 2323 2020 4C41 5354 2046 4945 4C44
OD00 00FE
```

"OLD" form analysis -

```
20  FF 0010 A22E OD
      10 REM .
0000 FF 0020 A7FF 3500 2C41 242C 4224 2C43 242C 4131 2C33 2A41 2C34 352F 422A
4431 OD
      20 PRINTUSING 3500 ,A $ , B$ , C$, A1, 3 *A ,45/B*D1
0000 FF 3500 D820.2323 2323 2320 2023 2323 2323 2023 2024 2323 232C 2323 232E
      3500 % . # # # # . . # # # # . # . $ # # # , # # # .
      2323 2020 2023 2323.2C23 2323 2020 4C41 5354 2046 4945 4C44 OD00 00FE
      # # . . . # # # , # # # . . L A S T . F I E L D
```

"NEW" form disk dump -

```
60 N E W          FD
20FF 0010 A22E OD00 00FF 0020 A7FF 3500.2C7F F141 2C7F F142 2C7F F143 2C7F 1041
2C7C 032A 7FF0 412C 7C2D 2F7F F042 2A7F.1044 OD00 00FF 3500 D820 2323 2323 2320
2023 2323 2323 2023 2024 2323 232C 2323 232E 2323 2020 2023 2323.2C23 2323 2020
4C41 5354 2046 4945 4C44 OD00 00FE
```

"NEW" form analysis -

```
20  FF 0010 A22E OD
      10 REM .

00 00FF 0020 A7FF 3500.2C 7FF141 2C 7FF142 2C 7FF143 2C 7F1041
      20 PRINTUSING 3500 , A$ , B$ , C$ , A1
2C 7C03 2A 7FF041 2C 7C2D 2F 7FF042 2A 7F1044 OD
      , 3 * A , 45 / B * D1

00 00FF 3500 D820 2323 2323 2320 2023 2323 2323 2023 2024 2323 232C 2323 232E
      3500 % . # # # # . . # # # # . # . $ # # # , # # # .
      2323 2020 2023 2323.2C23 2323 2020 4C41 5354 2046 4945 4C44 OD00 00FE
      # # . . . # # # , # # # . . L A S T . F I E L D
```

DATA FILE - LAST SECTOR STARTS W/ A0 FOLLOWED BY 2 BYTE USED FIELD

	FILENAME	TYPE	START	END	USED	FREE
EXAMPLE	DFORM2	0	834	835	578	144
	PROGRESS	0	836	41381	28031	12515

SECTOR 835 STARTS WITH A0|0242|

$$0242 \text{ HEX} = 5^{12} + 6^4 + 2^2 = 578 \text{ USED}$$

SECTOR 41381 STARTS WITH A0|6D7F|

$$6D7F \text{ HEX} = 24576 + 3328 + 112 + 15 = 28031 \text{ USED}$$

16 Mar 90

To: Tyler Olsen, Wang  
 From: Chris Cummings, TOM  
 Re: Your request for info on our usage of undocumented disk areas

## DATA FILES

### Trailer sector

001:003 Assumed to be A0 00 01 (SPEED does not use DATA SAVE DC END)  
 004:056 unused  
 057:064 We store the name of the data file here for potential use by recovery programs. If you decide you want to do the same thing, please use these bytes. To be consistent with VLSIs, we will have to continue to use these bytes for this purpose. It would be nice not to have to write exception code just for the 386.  
 065:192 Actively in use by SPEED  
 193:256 Currently unused, but we would like to reserve it.

We would appreciate your dedicating bytes 65 thru 256 for use by applications, and reserve the first 64 (or 56) bytes for yourselves.

Also, please stipulate the condition you leave a trailer in under various conditions. For instance, DATA SAVE DC OPEN "oldname", "newname" currently blasts the trailer. Some might question whether RENAME does the same thing. Do you copy a trailer with MOVE "filename" or recreate it? If 'applications bytes' are defined, programmers need to know under what conditions they are responsible for preserving the data. If you do wipe out the trailer, initialize unused or 'applications' bytes to known values, such as nulls, rather than leaving them undefined.

### Excess sector bytes using DA/DC

Excess undefined bytes usually occur at the end of sectors containing information stored in DA or DC formats. Should we ever use these bytes, we would assume they would be overwritten whenever any record was written into the sector. We have a few places in SPEED where we keep information DA. It wouldn't hurt us if you decided to initialize these bytes to null.

### Excess sector bytes using BA

Although it's not possible to load less than 256 bytes with BA, you can save less. Currently, a DATA SAVE BAT (X) "WANG" will write WANG in a null-padded sector. The null-padding is undocumented and needs to be defined. Although I haven't tried BM, I assume it works the same as BA.

I frankly don't know what the heck AC does.

## PROGRAM FILES

### Header

We make no use of bytes 11 thru 256. We wouldn't mind if they were initialized to nulls.

### Program Text Sectors

In non-wrap programs, the bytes after the FD (or FE) are undefined. We currently do not use them.

As we discussed, SPEED I programmers specify an 'include' in their mainline programs in an image (%) statement called the loadline. Similar to the #INCLUDE compiler directive in other languages, the loadline lists the names of other program files that must be loaded in simultaneously whenever this program is run. This feature is fundamental to the quantity and consistency of the code SPEED programmers can fit on a single Wang platter, and they have built their applications around it for 12 years.

We have a 'loader' program called SP LOAD which gets called whenever a SPEED-based program chains to another SPEED-based program. SP LOAD's main purpose is to locate the loadline, decode it, and set up a multi-program load that sometimes involves 20 or 30 files. It's important that SP LOAD be able to find the loadline in a program file, and find it efficiently.

Our current method involves the following steps:

1. Get start-sector and sectors-used using a LIMITS.
2. Calculate the address of the last usable sector of the file.
3. Load the sector.
4. Look for an FE (or FD).
5. Search backwards through the bytes prior to the FE/FD for a D8 (image). If none, decrement the sector address and go to 3.
6. Search forward from the D8 for OD to bracket the image.

Problem: FD and FE are redefined in NEW format and nothing has taken their place. A D8 or OD can appear anywhere and must now be taken in context.

We would be willing to stipulate to our resellers that the loadline must be the last line of their programs (it is now defined as the last image) when using NEW format, if you will define the leftover bytes in any sector as being nulls. In this situation, we would eliminate step 4 above, and modify step 5 to use the entire sector.

We would only be able to use this algorithm change on files that are in NEW format. While we would expect OLD format files saved or resaved on the 386 to have null-filled sectors, we would not be able to tell if a program file was imported from a VLSI, or merely maintained on a muxed system containing both VLSIs and 386s. It would be very difficult to look at some program text and unequivocally determine if it is NEW or OLD.

Unless someone has a bright idea, we will have to load the header sector and interpret the header byte. If it's HEX(60), we'll use the new technique. If anybody thinks I should be checking the '20' bit instead, get it on record now.

### Extra Sectors

We make no use of any of the extra sectors that can be allocated to a program file. We DO assume in some of our utilities that extra sectors can be harmlessly eliminated when copying a file or condensing a disk.

### Trailer

We assume that bytes 2-3 contain the number of sectors used (binary). A couple of our file copy utilities alter the size of a program file (at the programmer's request) when copying to a new platter.

### DISK INDEX

We make no use of bytes 7-16 of sector zero, nor of bytes 7-8 in any index slot. For the record, Niakwa uses bytes 7-8 of sector 0, and bytes 7-8 of each index slot to implement 24-bit disk addressing, however we only check for these bytes on Niakwa systems.

We assume A LOT - specifically that what has heretofore been documented still goes. This 1040 program file business is going to cause some significant grief before its all over with.

If Taiwan REALLY needs to know what kind of program load to perform from the 1040 in the index, how in blue blazes are they going to handle a LOAD DA for crying out loud. This is a mistake of monstrous proportions. The return can't possibly be worth the trouble it's going to cause you for years. Run this one by Bruce.

### EXTRA DISK SECTORS

We make no use of any sectors beyond the max-catalog-area. We open no DC TEMP files, nor attempt to access read-only sectors at the end of some disk platters. We assume VAL(STR(sector-0,5),2)-1 is the last available sector.

### UNUSED DISK SECTORS

We assume that any sectors between max-used and max-area are undefined. We do not use any of these undefined sectors, but we do assume that all of them are available should we decide to create a file.

a

## CS/2200 Programming tip:

### Problem .... Verify value for all legal disk addresses

The following routine was incorporated into "@MOVE1" on the CS Systems Utilities to verify all legal disk addresses. This logic, or a variation on it, may be required in other software packages.

From "@MOVE1" DEFFN'100 to verify disk address prompt.

```
5025 DEFFN'100(S$)
: IF S$="340" THEN 5035
: $TRAN(S$,"AaBbCcDdEeFf")R
: IF POS("DB3"=S$)>0 AND POS("123567"=STR(S$,2))>0
:   AND VER STR(S$,3),"H">0 THEN 5030
: Q$="I"
: RETURN
5030 IF POS("3B"=S$)=0 OR POS("123"=STR(S$,2))=0 OR STR(S$,3)<>"O" THEN 5035
: IF STR(S$,1)="3" THEN STR(S$,3)="1"
: STR(S$,1)="D"
5035 Q$=" "
: RETURN
```

## CS/2200 \$INIT statements logic at 901 - 910

```

904 1t 2.6      $INIT( A$, T$, C$, P$(), D$(), P$      )
903 gt 2.6      $INIT( A$, T$, C$, P$(), D$(), P$, T2$() )
                      34, 16, 16, 16x8, 33x3, 8, 15x10

```

### Arg.# Description

```

Arg.1 Partition sizes      P x 1      17 bytes      with last = 00
      1 byte partition size for partition n      last = hex (00)
Arg.2 Terminal numbers    T x 1      ge 16 bytes
      1 byte terminal number for partition n      last = hex (00)
Arg.3 Partition modes      P x 1      ge 16 bytes
      1 byte partition mode for partition n
Arg.4 Bootstrap modules    P x 8      ge 128 bytes
      8 byte "FileName" for partition n
Arg.5 Device tables        33 x 3      ge 99 bytes
      3 byte device table item for each device
Arg.6 PASSWORD              1 x 8      ge 8 bytes
      8 byte system initialization password
Arg.7 Printer tables              gt 10 bytes
      8 byte file name, 1 byte hex dev. address, 1 byte term. number if dev. 04.

```

## CS/386 \$INIT statements logic at 905 - 908

```

905 386 Rel. 1      $INIT( U$, A$, T$, C$, P$(), D$(), P$, T2$() )
                      1 34, 16, 16, 16x8, 33x3, 8, 15x10
908 386 Rel. 2      $INIT( U$,A$(),T$(),C$(), P$(), D$(), P$, T2$() )
                      1 4x34,4x16,4x16, 64x8, 33x3, 8, 15x10

```

### Arg.# Description

```

Arg.0 CPU number          $1      CPU number 00-1F.
Arg.1 Partition sizes      P x 1      17 bytes      with last = 00
      1 byte partition size for partition n      last = hex (00)
Arg.2 Terminal numbers    T x 1      ge 16 bytes
      1 byte terminal number for partition n      last = hex (00)
Arg.3 Partition modes      P x 1      ge 16 bytes
      1 byte partition mode for partition n
Arg.4 Bootstrap modules    P x 8      ge 128 bytes
      8 byte "FileName" for partition n
Arg.5 Device tables        33 x 3      ge 99 bytes
      3 byte device table item for each device
Arg.6 PASSWORD              1 x 8      ge 8 bytes
      8 byte system initialization password
Arg.7 Printer tables              gt 10 bytes
      8 byte file name, 1 byte hex dev. address, 1 byte term. number if dev. 04.

```



"@GENPART code.. @GENPART 1/20/89

```
10 DIM A$17, A(16), AO(16),      B$(16)1,  C$16,  D$(33)3,
      F$8, FO$8,  F1$8, F2$8,  P$8,    P$(16)8,  T$16,  T1$(15)13
      S$32,      R(16)          S(16)          T2$(15)10
12 DIM  U$1,  WO$32, W1$16, W2$16, W3$(16)8, W4$(33)3, W5$(15)13,
      W9$16
```

@GENPART 4/12/90

```
10 DIM A$34, A(16), AO(16),      B$(16)1,  C$16,  D$(33)3,
      F$8, FO$8,  F1$8, F2$8,  P$8,    P$(16)8,  T$16,  T1$(15)13
      S(16) S$48                    T2$(15)10
12 DIM  U$1,  WO$48, W1$16, W2$16, W3$(16)8, W4$(33)3, W5$(15)13,
      W9$16
```

@GENPART 4/12/90

```
10 DIM A$34, A(64), AO(64),      B$(64)1,  C$64,  D$(33)3,
      F$8, FO$8,  F1$8, F2$8,  P$8,    P$(16)8,  T$16,  T1$(15)13
      S(16) S$48 SO$(4)48 R(64), RO(64) T2$(15)10
12 DIM  U$1,  WO$48, W1$16, W2$16, W3$(16)8, W4$(33)3, W5$(15)13,
      W9$16
13 DIM      A$(4)34, C$(4)64, T$(4)16, S$(4)48
```

```
904 1t 2.6      $INIT(      A$, T$, C$, P$(), D$(), P$      )
903 gt 2.6      $INIT(      A$, T$, C$, P$(), D$(), P$, T2$() )
905 386 Rel. 1  $INIT( U$, A$, T$, C$, P$(), D$(), P$, T2$() )
      1 34, 16, 16, 16x8, 33x3, 8, 15x10
908 386 Rel. 2  $INIT( U$,A$(),T$(),C$(), P$(), D$(), P$, T2$() )
      1 4x34,4x16,4x16, 64x8, 33x3, 8, 15x10
```

```
2730 DATA LOAD F2$, W,      W9$, WO$,W1$,W2$,W3$(), W4$(),      W5$()
      to      W$,
1220 to      F$, U,      U$, S$, T$, C$, P$(), D$(),      T1$()

2760 DATA SAVE F$, U,      U$, S$, T$, C$, P$(), D$(),      T1$()
```

Arg.#	Description	Size	2.6	3.0	3.3	386	
Arg.0	CPU number	\$1	no		no	no	\$1
Arg.1	Partition sizes	P x 1	\$16	\$16	\$16	\$34	\$
Arg.2	Terminal numbers	T x 1	\$16	\$16	\$16	\$16	
Arg.3	Partition modes	P x 1	\$16	\$16	\$16	\$16	\$64
Arg.4	Bootstrap modules	P x 8	\$ (16)8		\$16)8		\$16)8
Arg.5	Device tables	33 x 3					
Arg.6	PASSWORD	1 x 8					
Arg.7	Printer tables						

U\$1 CPU number 01-32 for 386 '20' for VLSI  
 U\$1 CPU number '20' identifies for VLSI  
 for 386 U\$ bytes 'CO' identify partition numbers.  
 00 from 1st DATA SAVE identifies partitions 01-16.  
 01 from 2nd DATA SAVE identifies partitions 17-32.  
 10 from 3rd DATA SAVE identifies partitions 33-48.  
 11 from 4th DATA SAVE identifies partitions 49-64.

@GENPART changes for 64 partitions.

Delete a configuration -- original concept set FileName = " ".  
Each configuration is 3 sectors long.  
Current = 1-3  
Each of 16 configurations is 3 sectors.  
Config file is 53 sectors.  $1 + 3 + (16 * 3) + 1$ .

Change to move configurations toward "current".

"Current" will be changed to allow maximum size 12 sectors.  
(4 screens \* 3 sectors)

Each configuration will be a multiple of 3 sectors long.

VLSI items will be 3 sectors as currently set.	U\$ = " "	W = 1-16
.386 items will be 3 sectors as currently set.	U\$ lt " "	W = 1-16.
.386 items will be 6 sectors as currently set.	U\$ lt " "	W = 17-32.
.386 items will be 9 sectors as currently set.	U\$ lt " "	W = 33-48.
.386 items will be 12 sectors as currently set.	U\$ lt " "	W = 49-64.

The 3 sectors are configured as follows:

F2\$,	W,	W9\$,	W0\$,	W1\$,	W2\$,	W3\$(),	W4\$(),	W5\$().
\$8	n							
\$8	Fi							

"Delete" logic lines 1285-1310

1290 GOSUB 2730	read @SYSFILE item
: IF END THEN 1320	
: IF F1\$ ne F2\$ THEN 1290	read file until FileName is found.
: Z = 3*(INT((W-1)/16+1)	Set Z with # sectors to remove.
1300 GOSUB 2730	read @SYSFILE item
: IF END THEN 1310	on END file exit.
DBACKSPACE #0, Z S	Backspace

"Current"	Sector 1-.
"Current"	Sector 1.

DS Tape Utilities  
Release 2.0 prompt scenario:

B a c k u p   D i s k   P l a t t e r   t o   C a s s e t t e

Address of tape cassette drive (D5F, D6F, or D7F): D5F  
Append onto tape or Erase tape (A or E): E

Address of disk platter to backup (blank, if no more): \_\_\_\_\_  
Platter name: 07/19/90

Proposed      prompt scenario:

B a c k u p   D i s k   P l a t t e r   t o   C a s s e t t e  
---            45 MB type cassette      150 mb drive  
Address of tape cassette drive (D5F, D6F, or D7F): D5F  
Append onto tape or Erase tape (A or E): E

Address of disk platter to backup (blank, if no more): \_\_\_\_\_  
Platter name: 07/19/90

if A parameter then show.  
data from existing catalog on tape.

Address of disk platter to backup (blank, if no more): \_\_\_\_\_  
Current index settings.  
Platter name: 07/19/90

*TC.C. Support Utiltities.*

*.ATOM010A*

*.ATOM020A*

*.ATOM020B*

*.ATOM030A*

*.ATOM030B header = 41*

*.DE1.010A*

*.DE1.012B*

*.MENU010A header = 41*

*.OFFLINE*

*.QUIKLIST*

*.START*

*.TCCLEAR*

*.TCFORMAT*

*.START renamed STARTTCS*

GBS notes: from diskette rcvd from David Thompson.

<>

Make Configuration: TBO.1

Partition 1	5 K	Term 2	Loads "GBSM"
Partition 2	21 K	Term 4	Loads "STARTGBS"
Partition 3	27 K	Term 2	Loads "STARTGBS"
Partition 4	8 K	Term 2	Loads "@GBSM"
Partition 5	56 K	Term 1	Loads "STARTGBS"

Problems in "@GENPART"

1. Device table remove /204.

On load with above configuration:

Terminal 1 and 4 showed "Waiting for universal global"

. halt/step showed waiting for "uGBS"

. Partition status program showed error A02 in Partition 1.

Solution: Problems in "@GENPART" Rework Configuration.

. Assign partitions for "@GBSM" to terminal 0.

. Double memory for other partitions.

Partition 1	10 K	Term 1	Loads "GBSM"
Partition 2	21 K	Term 4	Loads "STARTGBS"
Partition 3	27 K	Term 2	Loads "STARTGBS"
Partition 4	16 K	Term 0	Loads "@GBSM"
Partition 5	56 K	Term 1	Loads "STARTGBS"

On load with above configuration:

Terminal 1 shows Partition 5 4150 IF @Q1 GT 0 then 4200

ERROR P55: Undefined variable

Line 4060 is looking at @PSTAT(1) byte 9 for "M", 386 will show "W", TURBO REQUIRES T  
.looking in bytes 10 and 11 for memory less than 5K.

.... also IF Q7\$="u" THEN S\$="uGBS"

change end of line 4060 to

4060 . : . : . : SO\$,S\$=" " : IF STR(Q6\$,9,1) <> "V" THEN SO\$,S\$="GBS"  
: IF Q7\$="u" THEN S\$="uGBS"

GBS notes: from diskette rcvd from David Thompson.

<>

Make Configuration: TBO.1

Partition 1	5 K	Term 2	Loads "GBSM"
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.looking in bytes 10 and 11 for memory less than 5K.

.... also IF Q7\$="u" THEN S\$="uGBS"

change end of line 4060 to

4060 . : . : . : S0\$,S\$=" ": IF STR(Q6\$,9,1) <> "V" THEN S0\$,S\$="GBS"  
: IF Q7\$="u" THEN S\$="uGBS"

IDEAS changes for CS/386 operation.

updated 10/02/90

Problem programs in NEW format are not recognized:

IDEAS306

line 9060 AND STR(K\$(1),2,1),CO) was 80  
: IF STR(K\$(1),2,1)=HEX(40) THEN 9070

IDEAS ~~CANNOT~~ SOMETIMES FILL ENTIRE 256 BYTES WITH DATA & WOULD NOT  
PUT AN 'EP' END OF FILE MARKER.

VLSI CAN HANDLE THIS BUT 386 WILL GIVE A02 ERROR.

ISS changes for CS/386 operation.

updated 9/18/90

### Partition generation:

Part 1 make 6K.

Part 2 make 20 K.

Parts 3 .. n make 120 K.

### ISS.000A

330 move last stmt segment to new line 430. Add following code to end of 330.

330 . : . : . : . : . : IF S3=5 THEN PRINT "CS/386"

### ISS.000M

420 A\$= \$PSTAT: S3=4: IF STR(A\$,9,1)="V" THEN S3=3: IF STR(A\$,9,1)="W" THEN S3=5

... leave IF S3 = tests on line 420.

... place 6 stmts beginning \$GIO on 430.

430 \$GIO/005( ...

ISS.205S line 8875 disk addresses see below

### ISS.229S \$PSTAT

7167 R9\$(2)=\$PSTAT(1) : IF STR(R9\$(2),9,1)="W" THEN RETURN : IF STR ..

### SORT,402A

line 4590 change from

4590 M1=INT(M\*1024)-698

to 4590 M1=INT(MIN(M,64)\*1024)-698

Enhancement to ISS utilities to check for all legal disk addresses

In "ISS.205S" Replace DEFFN '205 logic, coded on lines 8875-8915 with

8875 DEFFN '205(R,W3\$,R1)

: Q\$=" "

: IF R1<>0 AND R1<>1 OR R<0 OR R>15 THEN Q\$="X"

: IF W3\$="340" THEN 8895

: \$TRAN(W3\$,"AaBbCcDdEeFf")R

: IF POS("DB3"=W3\$)>0 AND POS("123567"=STR(W3\$,2))>0  
AND VER STR(W3\$,3),"H">0 THEN 8885

: Q\$="I"

: GOTO 8905

8885 IF POS("3B"=W3\$)=0 OR POS("123"=STR(W3\$,2))=0 OR STR(W3\$,3)<>"0" THEN 8895

: IF STR(W3\$,1)="3" THEN STR(W3\$,3)="1"

: STR(W3\$,1)="D"

8895 Q\$=" "

8905 IF R1=0 OR Q\$<>" " THEN RETURN

: SELECT #R < W3\$>

: RETURN

"KFAM107U" reported by Tom Carpenter 9/12/90. (he went back to earlier KFAM).

490 GOSUB'50(15):\$UNPACK(F=HEX(A008 A003 ....6001 5003 6003 A001 A009))) ...

should be

490 GOSUB'50(15):\$UNPACK(F=HEX(A008 A003 ....6001 5003 5003 A001 A009))) ...

KFAM on initialization may give X75 invalid #.



# Speed Up Wang CS/386 Systems !!!

## !AUTO File Manipulation Utility from SOFTWARES

The full speed potential of most CS/386 installations is lost because the programs files are left in the "OLD" file format. Loading and resolving a program file in "OLD" format on a CS/386 takes 10 times as long as loading the same file in "NEW" format.

Until !AUTO, your only choice was to laboriously LOAD and RESAVE each and every program file by manual commands. If your program set includes hundreds of files, you probably haven't had the time. If you don't convert, you are cheating your customers out of the full potential of the CS/386.

- ⇒ !AUTO converts multiple files from NEW to OLD and back and includes wrap, unwrap, protect and extra sectors options. !AUTO can automatically split lines that become too long during conversion.
- ⇒ Did you ever wish you could automatically print listings of multiple files to a band printer at full speed. !AUTO can do this too.
- ⇒ Text searches? !AUTO uses the LIST T command built into the operating system - no changing your utilities with every OS update.
- ⇒ In immediate mode, !AUTO accepts any legal BASIC-2 command and displays the result and/or the error message.
- ⇒ As !AUTO processes batches of files, it can print a log of activity to verify successful conversion and file exceptions.

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