2200/WP SOFTWARE DATA SHEET

2200 WORD PROCESSING SOFTWARE DATA SHEET

Overview

2200 Word Processing Software is an application package that provides powerful word processing capabilities for the Wang 2200 series of small business computers. 2200 Word Processing Software offers the features and flexibility of Wang word processing software in conjunction with data processing capability. Designed to be operationally similar to Wang's successful Office Information Systems word processing software, 2200 Word Processing Software is easy to learn and simple to operate. In a multi-user environment, 2200 Word Processing can support from one to eight terminals, depending upon the chosen system configuration.

2200 Word Processing Software can be run on any Wang 2200 series VP, SVP, LVP, or MVP. The addition of 2200 Word Processing Software costs relatively little, yet enables the user to design a system combining data processing and word processing, regardless of system disk storage and projected applications. The specially designed 2236DW integrated terminal supports data processing and word processing functions, so both activities can be performed from a single terminal.

Configuration

2200 Word Processing Software requires the following basic system configuration with any Wang 2200 printer.

- A 2236DW integrated terminal
- A VP series CPU with a minimum of 32K user memory
- One megabyte of disk storage
- A 28K memory partition for each terminal

If letter-quality printing is desired, a Wang 2281W or 2281WC daisy printer is recommended. 2200 Word Processing Software can be run on a 2260 or 2280 Fixed/Removable disk drive, the Winchester-style fixed disk, or the double-sided, double-density diskette.

Present users of Wang 2200 systems can upgrade existing 2236DE terminals to make use of 2200 Word Processing Software. New 2200 series users will be able to construct their systems with any combination of 2236DE and 2236DW terminals, thus allowing a broad range of system configurations.

For further information regarding the 2236DW word processing terminal, please refer to the Model 2236DW Integrated Terminal Data Sheet.

Software

2200 Word Processing Software meets the word processing needs of virtually any office environment. Operation of 2200 Word Processing Software is easy to learn -- training can be accomplished in a minimal amount of time with a specially prepared training package.

2200 Word Processing Software enables the user to manipulate an entire document and to move freely to any specified page within that document. Text movement is accomplished through the use of editing and operational keys and a cursor movement/screen keypad located on the 2236DW terminal.

2200 Word Processing Software is designed for maximum efficiency and simplicity of use. A description of some 2200 Word Processing Software features follows.

- Document Creation -- When a document is created, its ID number is automatically assigned by the system within a library specified by the operator. The library name is indicated by a single upper- or lower-case letter that follows the document ID number.

- Editing -- Text editing features include a format line that can be easily modified, Automatic Centering, Tabbing, Decimal Column Alignment, Indent, Insert, Delete, Search, Replace, Move, and Copy. Text manipulation is further facilitated by Super Copy and Super Move, which enable text to be transferred between documents.

- Print Document — The Print Document menu establishes the desired document print specifications. Choices made within this menu affect the appearance of a printed document by determining the number of copies to be printed, lines per page, pages to be printed, page numbering, and type of forms being printed.

- Special Print Functions — One function allows a document to be printed directly from an archive diskette (no filing to system disk necessary). Another allows an operator to view a CRT image of each page of a document before printing.

- Document Index — Creates a CRT display of all the documents in any library or on any archive diskette, listing as well the operator, author, and comments relating to each of those documents.

- Document Filing — Document storage, retrieval, and backup are handled by filing and copying onto archive diskettes, which can contain up to 300,000 characters. Document compatibility with Wang Office Information Systems is possible, depending upon the diskette type employed.

- Utilities — Include procedures to display the current system configuration, change the system date, and recover a document from a damaged diskette.

- Supervisory Functions — Include a wide range of operations that enable the key operator to set terminal, printer, and archive defaults, and to configure and maintain document libraries and volumes.

- Glossary — Allows commonly used words, phrases, or standard paragraphs to be stored. These entries can later be retrieved and displayed on the screen with a 2-keystroke sequence.

SAMPLE ADD-ON

INSTALLED SYSTEM:

2200 VP-8	32K	$ 6,000
2270A-1	DISKETTE	$ 3,600
2236DE	TERMINAL	$ 2,700
2231-W-2	PRINTER	$ 3,200
22C32	CONTROLLER	$ 1,000
2260C 1/2	5 MB DISK	$ 9,200
		$25,700

2200/WP ADD-ON

2236DE TO 2236DW UPGRADE		$ 1,000 PLUS INSTALLATION
2200/WP SOFTWARE		$ 2,000
2281W PRINTER		$ 4,500
	BOOKING	$ 7,500
	COMMISSION	$ 375

INCREASE REVENUE BY ADDING TERMINALS, PRINTERS, MEMORY, AND UPGRADES TO MULTI-TERMINAL SYSTEMS.

INITIAL SYSTEM:

2200 MVP-16	64K	$12,000
(2) 2236DE	TERMINALS	$ 5,400
2236 MXD	4-TERMINAL CONTROLLER	$ 1,000
2231W-2	PRINTER	$ 3,200
22C11	CONTROLLER	$ 300
2280-1	24.8 MB DISK	$19,000
		$44,700

2236DW	TERMINAL	$ 3,500
2200/WP	SOFTWARE	$ 2,000
2281W	PRINTER	$ 4,500
MEMORY UPGRADE TO 128K		$ 5,000
	BOOKING	$15,000
	COMMISSION	$ 750

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2200/WP
MARKETING PRESENTATION

PURPOSE

1. STIMULATE 2200 BUSINESS
2. EXPAND WANG'S IMAGE AS LEADER IN IIS
3. PROVIDE 2200 USERS WITH WP CAPABILITY
4. INCREASE AVERAGE NUMBER OF WORKSTATIONS/SYSTEM
5. INCREASE INCENTIVE TO UPGRADE TO MULTI-USER SYSTEMS
6. ENHANCE 2200 CAPABILITIES IN MAJOR ACCOUNTS

INTERNATIONAL

- U.K., GERMAN, FRENCH, LATIN AMERICAN, DUTCH AND FRENCH CANADIAN

- AVAILABLE AT RELEASE II

TARGET MARKETS

- EXISTING 2200 PRODUCT-LINE USERS
- FIRST-TIME USER
- MAJOR ACCOUNT

SELLING STRATEGY

EXISTING 2200 PRODUCT-LINE USER:

- ENHANCED FUNCTIONALITY
- LOW UPGRADE COST

FIRST-TIME USER

- "VALUE ADDED" - ENHANCEMENT TO THE PRIMARY DP APPLICATION
- MULTI-FUNCTION SYSTEM

MAJOR ACCOUNTS:

- DISTRIBUTED DP/WP AND INTERACTIVE COMMUNICATION TO HOST
- 3270 "ENHANCED" REPLACEMENT
- 8100 REPLACEMENT

MULTIPLE SITE LICENSE - $ 10,000

AVAILABLE TO:

- VENDORS
- SYSTEMS HOUSES
- MAJOR ACCOUNTS

CONDITIONS:

- ACCESS TO TECHNICAL INFORMATION CENTER
- 1 SELF-TRAINING PACKAGE
- MUST PROVIDE THEIR OWN SUPPORT

PRICING

2236DW	$ 3,500.00
Mo. Maintenance	$ 28.00
2200/WP Software	$ 2,000.00 EA.

WORKSTATION UPGRADE

2236DE to 2236DW	$ 1,000.00 PLUS INSTALLATION

[redacted]

POLICY DISCUSSION

- Purchase only
- Government rental

SALES POLICY

SOLD BY:

- ALL WANG SALES PERSONNEL WHO CURRENTLY HAVE 2200 RESPONSIBILITY
  - STANDARD COMMISSION PLAN
- SYSTEMS HOUSES THAT CURRENTLY HAVE 2200 RESPONSIBILITY
  - STANDARD DISCOUNT ON HARDWARE
  - NO DISCOUNT ON SOFTWARE

Features	Functions	Benefits
Document-Oriented System	Easy access to documents. Pages are arranged in screens of 21 lines.	Text entry and location are fast and easy. Increases operator productivity.
Operator Prompts	Screen messages guide an operator through the steps necessary to perform functions.	Simplifies system operation and reduces training time.
Editing Capabilities	Direct keytop functions allow the quick and easy insertion or deletion of characters, words, lines, paragraphs, or entire sections of text.	Eliminates the time-consuming retyping previously made necessary by major or minor changes.
Automatic Word Wraparound	No need to use the RETURN key at the end of every line. System makes end-of-line decisions.	Quickens input by eliminating the need to be attentive to line-ending decisions.
Cursor Movement	Uses a special keypad to control cursor and screen movement. System continually displays current cursor position.	Text movement and alteration simplified. Operator location in text is apparent at a glance.
Text Movement	Allows portions of text to be rearranged within a document or moved to a different document.	Changes sequence of text without retyping. Increases typing productivity.
Text Copy	Allows portions of text to be copied and entered elsewhere in the same document or in another document.	Easily duplicates text, while saving time and effort.
Global Search	Locates every instance in a document where an operator-specified character sequence appears.	Saves time in locating the desired character sequence.
Global Replace	Automatically replaces a defined character sequence with another throughout a document.	Eliminates the need for manually replacing every instance of a word or phrase.
Glossary	Stores commonly used words, phrases, or paragraphs for retrieval in two keystrokes.	Saves time and keystrokes used in preparing standard documents.

Print Document Menu	Allows the operator to define formatting and printing specifications and to store them with the text.	Permits an individual format to be created for each document and to be automatically recalled when the document is sent to the printer.
Print from Archive	Allows the operator to print directly from an archive diskette.	Saves time filing to and retrieving from storage diskettes.
CRT Image of Document	Allows the operator to see a CRT image of a document before printing.	Gives the operator an overview of a document's final format, eliminating the need to print drafts to check for appearance.
Utilities	Enables the operator to display the current system configuration, change the system date, or recover documents from damaged diskettes.	Great flexibility in system handling. Eliminates the retyping of damaged documents.
Supervisory Functions	Provides the system supervisor with a maintenance scheme for documents, libraries, volumes, and system defaults.	Contributes to the orderly arrangement of documents. System defaults are preplanned and error-free.
Archiving Procedures	Documents are filed or copied to diskettes or hard disks for storage and/or backup.	Provides flexible document management and added security.

DIFFERENCES BETWEEN 2200/WP AND OIS MAXIMUMS FOR 2200/WP

Incompatibilities with OIS/WP

Text Editor

I. When Edit Old Document has to recover an improperly closed document, a message is displayed on the CRT indicating the program's progress in the recovery.

II. The document summary screen in Edit Old Document and Create New Document has some minor cosmetic differences from the OIS.

III. When transferring control from one page to another (including Next and Previous screen across page bounderies) there will be a noticeable pause; a message on the CRT will indicate that the system is saving and loading pages.

IV. There will be a pause whenever a Delete, Format, Search, Replace, Copy, Move, Super Copy or Super Move keys is struck.

V. The 2200 Word Processor displays no end-of-text character (the dotted space), although the cursor will be sent to the proper place (i.e., the position for entry of the next character) when the cursor is moved to the end of text and the "(End of Document)" message is displayed.

VI. The center function is noticeably slower than on the WP and OIS systems.

VIII. Page size will be limited to 4096 characters. When inserting text, the message "Page "Full" will appear when the operator reaches the limit. When retrieving from archive, page breaks will be inserted at the nearest word break if necessary to preserve the limited page size; a warning will be displayed to the operator.

IX. Glossaries will be text recall only. No command strings, decision processing, or mathpak will be supported. The traditional glossary library of space will not be supported. Glossaries will be stored in letter-name libraries. Because the scheme for storing verified glossaries is different from the OIS, any glossary documents transferred from the OIS will have to be re-verified on the 2200, the "verified glossary" is deleted separately from the "source" glossary and glossaries can be edited at one terminal while they are attached at the same or another terminal. It is not possible to attach or detach during edit.

X. Keystroke statistics will use a slightly different approximation than OIS/WP. Until a time-of-day clock is generally available through the 2236 MXE controller, time statistics will be saved (when recalled from archive) and displayed, but not updated.

XI. Single character inserts and deletes will be allowed while in Insert mode, and Overstrike mode. This will be invoked by the shift of the Insert and Delete keys.

XII. Horizontal scroll will be deferred to Phase II. At best, it will be much slower than on the OIS because of communication time between the CPU and the terminal.

XIII. Command Note, Global Hyphenation and Repagination will be deferred to Phase II.

XIV. In Phase I, Insert will be terminated when a Page character is struck. In Delete, and while specifying text to be copied or moved, the system will not allow the cursor to move beyond the end-of-page character.

XV. Passwords cannot be entered during editing.

XVI. In Phase 1, keying FORMAT while in the format line will not bring in the format line from the prototype document.

XVII. In Phase I, keying TAB as a line end in an indented line will not bring you back to the indent. It will end the line the same way RETURN does.

XVIII. Some minor differences in messages are listed on the following page.

ACTION:	OIS	2200
COMMAND-MOVE, INSERT and DELETE at End of Text	'Move Cursor'	'Unknown Command'
COMMAND-BACKSPACE at End of Text	'No Next Screen'	'Unkown Command'
INSERT at End of Text	'Insert What'	'Move Cursor'
In Format Line press spacing character when not at spacing position	'Move Cursor'	'Invalid Key - Ignored'
In imbedded Format Line press FORMAT	Replaced with Page Format Line	'Invalid Key - Ignored'
In Format Line press GLOSSARY	'Which Entry'	'Invalid Key - Ignored'
In Format Line press COMMAND	'Which Command'	'Invalid Key - Ignored'
Press DELETE in Page Format other than Page 1	Entire page is deleted	'Invalid Key - Ignored'
SEARCH-UNDERSCORE (SHIFT/HYPHEN)	Cancels SEARCH and returns user to normal editing	Underlines the next character entered and executes search on that character
SEARCH-PAGE	Cancels SEARCH and returns user to normal editing	Executes SEARCH for PAGE graphic ( )
SHIFT/REPLACE-PAGE	'Cannot Globally Replace that'	'Invalid Key - Ignored'
Press NEXT SCRN at last screen	'No Next Screen'	If cursor is not on last character of screen, it is moved there. Otherwise, 'No Next Screen'.
Press PREV SCRN at last screen	'No Prev Screen'	If cursor is not on first character of screen, it is moved there. Otherwise, 'No Prev Screen'.

Print

I. In Phase I, printing will be done in foreground only, i.e., the terminal will be tied up until the print job is done. While the document is being printed, it will also be displayed on the CRT, to show the operator that the printer is working, and has not jammed or de-selected.

II. All of the items on the present OIS Special Print Functions menu will be deferred to Phase II.

III. Two new items will be placed on the Special Print Functions menu. Print From Archive Diskette will function in every way like the normal print except that the source of the document will be an archive diskette. CRT image of Printed Document produces a compressed image of the printed page showing the relative location of text on the page. This can be used to help in formatting and positioning text on the printed page.

IV. It is not possible to sense top-of-page to trigger reprinting of a page.

V. Stop codes will not be honored (although they may be entered in the editor).

VI. The operator must enter a valid printer number; the system cannot default printer number.

VII. The character set and pitch parameters have no effect on the print function. Pitch is selected by a switch on the printer, and only one (standard) character set is supported.

VIII. The system does not allow the operator to specify delete after printing.

IX. A CRT-only option is allowed for device specification.

X. Bold print, double underscore, and overstrike with slash will be supported.

XI. Multiple levels of superscripts and subscripts will be supported.

Supervisory Functions

I. Supervisory Functions will include a set of enhanced document filing functions:

   A. Moves and Copies between system libraries
   B. Archiving with a skeleton document left behind
      (These enhanced functions will be deferred to Phase II)

II. The following system-management functions will be available from the supervisory functions menu:

- Clear In-Use Condition
- Alter Passwords
- Terminal Default Assignments
- Archive Assignments
- Peripheral Device Selections
- Volume Maintenance
- Library Maintenance
- System Disk Assignment
- Catalogue Display/List
- Transfer Archive
- Recover Archive
- Rename Document
- Delete Glossary
- Recover Damaged Volume (Deferred to Phase II)
- Advanced Filing Functions (Deferred to Phase II)

General

I. Menus will incorporate the OIS/DOS feature of an implicit search by the first letter of the item name. The currently selected item will be highlighted. Initially, time will not be displayed, and date will be accurate only if an operator manually changes it.

II. Because the typical 2200 has more than one diskette drive, there will be a Supervisory Function to assign logical names to the drives. Any other function which references archives (e.g., document index, document filing) will request the name of the archive to be used; a default value will be supported as a terminal default.

III. On general option and text-entry screens, TAB will advance the cursor to the next field. Shift TAB will move the cursor to the previous field. On option-selection fields, the current selection will be highlighted (high-intensity); a selection can be made by pressing the first character of the item name. The cursor can move to <u>any</u> spot on the CRT screen.

IV. Because of character set limitations, we will not be able to support underlined NOTE and STOP codes.

V. When entering document number in Edit Old Document, Print Document, and Document Filing, you must press execute after entering the document ID.

VI. The next and previous screen keys are not active when entering document ID.

Document Filing

I. The multiple filing option will not be supported until Phase II.

II. The range of filing option will request starting and ending document ID's rather than starting ID and number of documents.

III. The archive location must be entered.

IV. OIS compatible archive diskettes must be formatted before the Prepare New Archive function is run. On the WP and OIS systems, the formatting is part of the Prepare function.

Document Index

I. The "Which Ones" column will support By Title and By Comment, in addition to the usual WP/OIS options.

II. Because there is no background printing, the printers option is removed.

III. The archive location must be entered whenever indexing an archive.

Some Limits of 2200 WP:

Number of pages per document:	116 text pages, plus header, footer and work pages.
Search:	125 characters
Replace:	1024 characters
Copy, Move, Super Copy, Super Move:	4096 characters
Format Line:	80 characters, containing up to 39 tab positions. Any format line greater than 8 characters (e.g., retreived from OIS archive) will be truncated to 80.
Page Size:	4096 characters. Any pages larger than this will be split when retreived from archive.
Copy, Move, Super Copy, Super Move, Insert, Delete:	All can handle up to the end of the page (including the page break character), but they cannot span pages in a single operation.
Copy, Move, Super Copy, Super Move, Global Replace:	Will abort (with a message) but without performing the action, if the operation would result in a page larger than 4096 characters.

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Wang's Office Automation Products

Comparative Analysis

Operator Input/Edit Aid Key	OIS/BASIC	VS/WP	2200/WP
Indent	yes	yes	yes
Page	yes	yes	yes
Center	yes	yes	yes
Decimal Tab	yes	yes	yes
Format	yes	yes	yes
Merge	yes	yes	Release II
Note	yes	yes	yes
Stop	yes	yes	yes
Search	yes	yes	yes
Replace	yes	yes	yes
Global Search	yes	yes	yes
Global Replace	yes	yes	yes
Copy	yes	yes	yes
Move	yes	yes	yes
Super Copy	yes	yes	yes
Super Move	yes	yes	yes
Command	yes	yes	yes
Superscript/Subscripts (not displayed on screen)	yes	yes	yes

not yet

Operator Input/Edit Aid Key	OIS/BASIC	VS/WP	2200/WP
Go To Page	yes	yes	yes
Underscore	yes	yes	yes
Delete	yes	yes	yes
Insert	yes	yes	yes
Hyphenation (Global)	yes	yes	Release II
Repagination	yes	yes	Release II
Header/Footers	yes	yes	yes
Glossary	yes	yes	subset
Decision Processing	yes	yes	no
Advanced Functions	yes	no	no
Dual Column	yes	yes	not currently available
Justification	yes	yes	yes
Half Justification	yes	yes	[redacted] NO
Horizontal Scroll	yes	yes	Release II (UPDATE)

	OIS/BASIC	VS/WP	2200/WP
Sort	yes	yes	[redacted] no
Math	yes	yes	no
Password Security	yes	yes	yes
Document Archiving/Filing	yes	yes	yes
List Processing	yes	no	[redacted] DATA MERGE
Utilities:			
Duplicate Disk	yes	not currently	yes
Library Catalog	yes	yes	yes
Recover Diskette	yes	not currently	yes
Document Sort	yes	not currently	Release II
File Utilities:			
Single/Multiple File Copy	yes	not currently	[redacted] NO
Single/Multiple File Delete	yes	not currently	[redacted] NO
Assign Password	yes	equivalent	no
Supervisory Functions: (Password Protected)			
Change Doc. Password	yes	yes	yes
Clear In Use Condition	yes	yes	yes
Create Library	yes	yes	yes
Rename Documents	yes	yes	yes
Set Workstation Defaults	yes	yes	yes
Document Summary Collection	yes	no	no

	OIS/BASIC	VS/WP	2200/WP
Printers			
Final Quality Printer	35 cps	35 cps	30 cps
Final Quality Wide Carriage	35 cps	35 cps	30 cps
Matrix Printers	120 cps 200 cps	120 cps 200 cps	70 cps 120 cps 200 cps
Line Printers	425 lpm	430 lpm 600 lpm	400 lpm 600 lpm
Band Printers		250 lpm 600 lpm	250 lpm 600 lpm
Twin Head Printer	yes	no	no
Intelligent Image Printer	yes	no	no
Printer Options			
Twin Sheet Feeders	yes	yes	yes
Bi-directional Pinfeed Forms Tractor	yes	yes	yes
Envelope Feeder	yes	not currently available	not currently available
Plastic Print Wheels	yes	not currently	yes
Output Peripherals			
Typesetter 48Z	yes	not currently	not currently available
Paper Tape Interface	yes	no	yes
OCR Interface	yes	via Bisynchronous TC	via Bisynchronous TC
Magnetic Card Reader	yes	no	no

Telecommunications	OIS/BASIC	VS/WP	2200/WP
Bisynchronous	yes	yes	yes
Asynchronous	yes	yes	yes
3270	yes	yes	yes
Mailway	yes	yes	Release II
Keyboard Features			
Numeric keypad	optional	yes	yes
Multilingual	optional French, German, Spanish, English with all characters and the language for memos	support English, Dutch and German currently	U.K., German, French, Latin American, Dutch and French Canadian will be available with Release Two in July, ~~1981~~ 1982.

2200/WP SUPPORT CONCERNS

MODIFYING MENU

2200/WP SUPPORT CONCERNS

In Mid-May, the 2200/WP Software package was released on a controlled basis. Only those listed on a priority customer-base received this initial release. A commercial release is not far behind, at which time software will be available to fill all customer orders, and will be released to field offices.

A 2200 Support Policy will be issued and distributed in the near future by the Strategies and Policies Group . Part of this policy deals with 2200/WP Support. The following discusses various concerns for those supporting the package as released.

I.) Most 2200/WP software is released in scrambled protected form. Thus, the user or vendor cannot list or modify any of the 2200/WP code.

II.) Certain Start and Menu modules are left unprotected so that customized changes can be made by a properly qualified person. These capabilities are not documented or publicized, and should be mentioned to a vendor or customer only if it has been determined that they can handle the programming changes involved.

Specifically, the initial start-up modules are unprotected to allow a user to look at COMmon variables being dimensioned, and the menu driver and menu nodes are unprotected to allow the user to rearrange the menus if necessary. The following lists those modules which are not protected:

START	(loads WPstart)
WPstart	(loads 609start)
609start	(COMmons and initializes system variables)
609menu	(general menu driver)
609MENU	(main menu node)
609UTIL	(Utilities menu node)
609Glos	(Glossary menu node)
609Super	(Supervisory Functions menu node)
609Prnt	(Special Print Functions menu node)
WPSUPER	(loads 609start, to load Supervisory Functins menu)

III.) Menu nodes behave exactly like @MENU nodes with these exceptions:

The first parameter of each menu item (this is the filename to @MENU) may also be a list of filenames for the WP menu driver. The entire list of filenames will be loaded in a single operation (i.e. LOAD T [n] F$()), when the list is used; the items in the list should be separated by commas.

IV.) The Supervisory Functions have been inhibited from the utilities menu (609UTIL), by changing the file type from an "M" to an "X". They can be very easily re-instated by a customer by changing the "X" back to an "M". The user must LOAD T "609UTIL", and LISTSD 9000. This will list out the data statements for the various menu nodes. Search through for the Supervisory Functions statement and make the appropriate change.

V.) Anytime a program failure occurs (the program crashes); a record of the following information would be very helpful to development.:

The operation that was in progress, and the stage of operation (example: while editing a document, just hit DELETE and Delete What had appeared . . .)

The line number that appears

The error number

Which COLON the arrow is pointing to (the line of text will not appear on the screen due to software protection)

The release number of the WP software

Other bits of information could be useful, such as:

The type of disk drive being used

If the editor is in progress, how full is the current page, how many pages in the current document.

If the error occurs on a line greater than 4000, it involves the disk routines; ask things like: How large is the volume involved, how many libraries are on the volume, how many documents are in the involved library, etc.

INSTALLATION

2200/WP "SYSTEM" INSTALLATION

Each set of WP software contains a utility program called "WPINSTLL"

Place diskette containing WP software in the floppy drive and take note of the device address (ie. 310, B10, or 350, etc.). For explanation purposes we will use disk device address 310.

Enter SELECT DISK 310.
LOAD RUN "WPINSTLL"

The software will prompt user for the date, time, and residing and destination addresses of software. Enter the proper responses.

User then must select installation option--Programs and Data files or Programs only.

Select Programs and Data files for initial installations of software

Select Programs only if software has already existed on machine. Original system data files contain all Volume and Library data and are thus preserved.

User is also given a Copy or Copy Verify option.

Copy verify will flag any errors encountered in the copy and output them to selected printer.

The next prompt asks the user to choose the action taken whenever a duplicate file is found on the destination disk.

Replace all such files will overwrite any file of the same name. This option should be chosen for any maintenance installation

Stop for confirmation for each file will ask the user if the original file should be overwritten . This option should be used for a first installation.

Terminate Immediately

After the copy of each platter is complete the user will be prompted to mount the next diskette at the proper disk address. An "end program" will appear when final copy is complete.

2200/WP SYSTEM SET-UP

After a primary installation of 2200/WP software, the WP "system" must be configured. This procedure includes assigning system disk, and creating volumes, libraries, archive locations, and terminal defaults.

The steps below outline the order of this system configuration procedure:

LOAD RUN "WPSUPER"
The Supervisory Functions menu will appear on the screen.

Select "System Disk Assignment".
Enter disk device address where software resides.

Select "Volume Maintenance".
Choose "Create" option to create any volumes desired. User will be prompted for Volume name, password, disk address, and the number of sectors to allocate for the volume.

NOTE: 200 sectors is the minimum alotment per volume. One full page of document requires 16 sectors of the volume.

Select "Library Maintenance".
Choose "Create" option to create libraries. User will be prompted for Volume location, next available document ID, and next archive ID. Defaults for these values are 0001.

Select "Archive Assignments".
Defines Archive labels to be used later in document filing. Choose archive label desired and "Create" option
System will prompt for type of archive--System or WP, and disk address for the location of the archive.

NOTE: Diskettes with white labels are used with the 2270 diskette drives and should be defined as WP Archives. Red label DSDD diskettes and hard disks should be defined as 2200 System Archives.

ARCHIVE ASSIGNMENTS

Archive assignments assign locations to be used when doing any function in Document filing. In the menu screen of Document filing, the user is prompted for the archive location. The user will input the location letter as assigned.

Archive assignments is run from Supervisory Functions. Unlike the OIS and WP systems the 2200 allows archiving to more than one location. A user may archive to a "White label diskette", a "Red label diskette", or an archive area set aside on hard disk. While in Document filing, the operator needs to know only the letter that identifies a location as set up by the Supervisor in Archive Assignments.

In addition to allowing more than one archive location, 2200/WP allows two types of archive disk; the supervisor must specify the appropriate type disk for each archive location set up:

> White label diskettes for single-sided,single-density diskette drives (the 2270A drives) are referred to as WP Archive Diskettes. When these are used, the archive diskettes generated are fully compatible with WP and OIS archives; they can be used to carry documents from one machine to the other.
>
> Any other disk drive with capacity of more than 1234 sectors (Dual sided, double density diskettes, and hard disks) may also be used for archiving--these are referred to as 2200 System Archives. Archiving is done into a standard Basic-2 catalogued data file, whose name is the archive ID assigned when Prepare Archive is run from the Document filing menu. Several 2200 system archives can co-exist on the same platter with each other and DP data and program files.

While assigning archives, the Supervisor must know the disk device address for each drive she assigns to a lettered location. For example, the leftmost drive on a 2270A diskette drive is often address 310, thus to assign this drive as location "A", the supervisor must give 310 as the device address, and define the location a WP Archive.

> NOTE: Device addresses vary between systems--check device addresses with each system's manager before answering 2200/WP prompts for disk device address.

Select "Peripheral Device Selections"
System prompts for device address for each printer, the type of printer at each location and comments. The printer numbers to the left correspond to the printer number assigned in the Print Document screen.

Select "Terminal Default Assignment"
System requests default library, default archive, and attached terminal type for each terminal.

Once the above items have been stepped through, the WP "SYSTEM" has been configured. Failure to complete this procedure after an initial installation results in error upon any attempt to enter the Editor.

SUPERVISORY FUNCTIONS

WANG 2200 Word Processing System
Supervisory Functions

Please Select Next Activity:

01/28/81

Clear In-Use Condition
. Alter Passwords
. Terminal Default Assignments
. Archive Assignments
. Peripheral Device Selections
. Volume Maintenance
. Library Maintenance
. System Disk Assignment
. Catalog Display/List
. Transfer Archive
. Rename Document

1. CLEAR IN-USE CONDITION

When the supervisor selects this utility, the following information is requested: document ID number. When EXECUTE is keyed, the system first checks to see if the document exists in the specified library and if it does clears the in-use condition flag if it was set. Upon completion, the system displays a message at the bottom of the screen. The supervisor must key 'CANCEL' to return to the Supervisory Utilities Menu.

1 - Maintenance program "609@inus"
2 - Active keys: N/S/E/W, CANCEL, RETURN, EXECUTE, SPACE, BACKSPACE, INSERT, DELETE, ERASE.

2. CHANGE DOCUMENT PASSWORDS

When the supervisor selects this utility, the first screen displayed is a sub-menu. The supervisor has the option of changing passwords on a) a single document, b) a range of documents, or c) all the documents of a specified library, by moving the acceptance block to the desired selection and keying EXECUTE. A second screen is displayed, requesting the necessary information to successfully complete the selected option.

A. Screen 1
   1. Displays the three options available to the supervisor a) single, b) range, c) all.
   2. Maintenance program - "609@pswd"
   3. Active keys N/S/E/W, CANCEL, EXECUTE, SPACE, BACKSPACE

B. Screen 2a
   1. Change password for a single document, requests the following information from the supervisor: a) document ID, b) library name, c) old document password, and d) new password.
   2. Maintenance program - "609@psw1"
   3. Active keys N/S/E/W, CANCEL, EXECUTE, SPACE, BACKSPACE, RETURN, TAB, BACKTAB, ERASE, INSERT, DELETE.

C. Screen 2b
   1. Change password for a range of documents, requests the following information from the supervisor: a) range of document ID numbers, b) library name c) volume password and d) new password.
   2. Maintenance program - "609@psw2"
   3. Active keys N/S/E/W, CANCEL, EXECUTE, SPACE, BACKSPACE, RETURN, TAB, BACKTAB, ERASE, INSERT, DELETE.

D. Screen 2c
   1. Change password for a library, requests the following information from the supervisor: a) library name b) volume password and c) new password.
   2. Maintenance program - "609@psw3"
   3. Active keys N/S/E/W, CANCEL, EXECUTE, SPACE, BACKSPACE, RETURN, TAB, BACKTAB, ERASE, INSERT, DELETE.

3. TERMINAL DEFAULT ASSIGNMENTS

When the supervisor selects this utility, the first screen displayed is a summary of all the terminal default values. By moving the acceptance block to the desired terminal number and keying EXECUTE, a second screen is displayed through which the supervisor can modify the defaults for that particular terminal. The terminal default information is stored in the data file "609@TERM"

A. Screen 1
   1. Summary of all terminals. There are five columns: a) terminal number, b) default library, c) default archive, d) attached printer type, and e) comment field.
   2. Maintenance program "609@term"
   3. Active keys: N/S/E/W, CANCEL, EXECUTE, TAB, BACKTAB, SPACE, BACKSPACE.

B. Screen 2
   1. Displays established defaults of the selected terminal. The supervisor can modify any or all of the defaults. If EXECUTE is keyed the system datafile "609@ TERM" is updated to reflect the changes. Otherwise, the datafile is not affected if CANCEL is keyed.
   2. Maintenance program "609@tmod"
   3. Active keys: N/S/E/W, CANCEL, EXECUTE, TAB, BACKTAB, SPACE, BACKSPACE, INSERT, DELETE, ERASE.

C. System datafile layout
   1. Name - "609@T"
   2. Type - BASIC -2
   3. LENGTH - 15 sectors (1 sector per terminal)
   4. Mode - DC mode (data saved through a (4)62 array)
   5. Array structure - byte 1 = library (A - Z, a - z, " ")
      byte 2 = archive " "
      byte 3 = binary value of printer type
      0=N/A
      1=Character
      2=Line
      bytes 10 thru 34=comment field
      bytes 25-248=not used (for future expansion).

4. ARCHIVE ASSIGNMENTS

When the supervisor selects this utility, the first screen displayed is a summary of all current archives defined for the system. By moving the acceptance block to the proper position, the supervisor will have the option of a) editing a currently defined archive, b) deleting an existing archive, or c) adding a new archive label to the system file "609@ARCH". Note this does not create a 2200 system archive data file, it only declares a valid archive label. System archives are created by the Initialize Archive Function in Document Filing.

When the second screen is displayed, the system will request the following information: a) the archive to create/edit/delete, b) whether or not the archive is a 2200 System Archive or a WP archive diskette and c) the device address of the archive.

A. 1. Maintenance program "609@arch"
B. System Data file-
   1. File name - "609@ARCH"
   2. Type - Basic 2
   3. Length - 55 sectors (2nd half of each sector of data file)
   4. Mode - DC mode (data saved through (4)62 array)
   5. Contents - Archive information bytes 125-132 Archive ID
      133-135 Disk Addresses
      136 Type
      137-161 Comment

5. PERIPHERAL DEVICE ASSIGNMENTS

When the supervisor selects this utility, the system will request the following information: a) printer address and types for four printer addresses, b) TC addresses and, c) comment field

A. Maintenance program - "609@disk"
B. System Datafile
   1. Name - "609@DISK"
   2. Length - 11 sectors
      Sector 1 - System disk address
      Sectors 2 - 5 - Printers
      Sectors 6 - 9 - TC addresses
   3. type - Basic 2
   4. Mode - DC mode (data saved through (4)62 array)
   5. Contents - Bytes
      1 - Type of Record
        "S" - System Disk,
        "P" - Printers
        "T" - TC
      2 - 4 - Address
      5 - Type of Device
        (Printers: 1=character, 2=line)
        (Disk: 1=Phoenix, 2=Winchester, 3=DSDD, 4=Other)
      6 - 30 - Comment

6. LIBRARY MAINTENANCE

The system will display a summary of existing libraries. By moving the acceptance block to the desired location, the supervisor will be able to add/edit/delete libraries on the system.

The system will request the following information: a) the volume associated with the library b) the next available document ID number, c) the next available archive ID number, d) whether or not the specified library is to be added to, edited or deleted from the selected volume and e) comments. If the maintenance is not a delete, a prototype document will be added to the specified volume if it does not already exist.

A. 1. Maintenance program - "609@type"
B. System Data File
    1. Name - 609@ARCH
    2. Type - BASIC 2
    3. Length - 55 sectors (1st half of each sector of data file)
    4. Mode - DC (data saved through (4)62 array)
    5. Contents - bytes 1 - library
        bytes 2-9 - volume name
        bytes 10-13 - next document ID
        bytes 14-17 - next archive
        bytes 18-42 - comment

7. VOLUME MAINTENANCE

The system will display a summary of existing volumes. When the supervisor makes his appropriate choice, the system will request: a) the location of the volume, b) volume password and c) whether or not volume is to be added to or deleted from MASTER VOLUME DIRECTORY or moved to another.

A. 1) Maintenance program - "609@vol"
B. MASTER VOLUME DIRECTORY
    1. Type - Basic 2
    2. Contents
        a) Volume name
        b) Password
        c) Disk Address
    3. Name - WPSYSTEM

8. SYSTEM ASSIGNMENT

When the supervisor selects this utility, the system will ask on which disk the System file is to be modified and the new address to be inserted in the System data file. The system disk addresses will be saved in sector 1 of the system file "609@DEVC". Maintenance Program: 609@sys.

9. CATALOG DISPLAY/LIST

When the supervisor selects this utility, the system will request: a) if a single volume or multiple volumes are to be reviewed and b) where the review is to be directed. The system will then display/list pertinent information regarding the volume, i.e. length of volume, number of libraries assigned to volume, number of documents currently in each library.

A. Screen 1
   1. Request node level and volume to be reviewed, and if display is to be directed to CRT or printer.
      1-Maintenance program - "609Cat0"

B. Screen 2
   Display of volume information arranged in column form
   1-Maintenance program - "609Cat1"

C. Printout
   Hardcopy listing of volume arranged in columnar form
   1-Maintenance program - "609Cat2"

Distribution:

0063A

ERROR CODES

IF EDITOR CRASHES:

If the editor crashes, it is usually possible to recover by simply re-running the program in core, i.e. type RUN then press RETURN. If that doesn't work, press SF'31 (shifted GOTO PAGE) or LOAD RUN RETURN.

APPENDIX B - Error Codes

ERROR CODES

Hex Error Code	Description
01	Volume full
02	File or Volume already exists
03	File or Volume does not exist
04	No free device slots
05	Incorrect password
06	Open access type error
07	File not open
08	Illegal file ID
09	Not enough room in file (to reuse scratched file)
10	File mess up
20	EOF reached unexpected (fatal)
22	Destination VAU not valid
23	Buffer variables not valid
24	No VAUS in file
25	Source & VAU # inconsistent
26	Volume init parameter inconsistent
27	Byte parameter error in replace
28	EOF reached normal (not fatal)
29	Data transfer with greater than 128 VAUs

Numeric Error Code	Description
80 thru 89	Disk errors (refer to BASIC-2 ref manual)
90 thru 99	I/O errors (refer to BASIC-2 ref manual)

APPENDIX A: BASIC-2 ERROR CODES

A.1 MISCELLANEOUS ERRORS (NONRECOVERABLE)

ERR A01

Error: MEMORY OVERFLOW

Cause: There is not enough memory free space remaining to enter the program line or accommodate the defined variable. System commands (e.g., SAVE) and some Immediate Mode statements still can be executed. (See Chapter 2, section 2.5 for a more detailed explanation of this error.)

Recovery: Make more space available by entering a CLEAR P, N, or V command to shorten the program or reduce the number of variables defined.

ERR A02

Error: MEMORY OVERFLOW

Cause: There is not enough memory free space remaining to execute the program or Immediate Mode line. Commands (e.g., SAVE) and some Immediate Mode statements still can be executed. (See Chapter 2, section 2.5 for a more detailed explanation of this error.)

Recovery: Make more space available by shortening the program or reducing the amount of variable space used by executing a CLEAR P, N, or V command.

ERR A03

Error: MEMORY OVERFLOW

Cause: There is insufficient free space in memory to execute the LIST DC, MOVE, or COPY statement (approximately 1K bytes of free space are required for MOVE and COPY and 100 bytes for LIST DC).

Recovery: Make more space available by executing a CLEAR P, N, or V command.

ERR A04

Error: STACK OVERFLOW

Cause: A fixed-length system stack (the Operator Stack) has overflowed. A maximum total of 64 levels of nesting for subroutines, FOR/NEXT loops, and expression evaluation is permitted. Often this error occurs because the program repeatedly branches out of subroutines or loops without executing a terminating RETURN or NEXT statement.

Recovery: Correct the program text, possibly by using a RETURN CLEAR statement to clear subroutine or loop information from the stacks.

ERR A05

Error: PROGRAM LINE TOO LONG

Cause: The program line being entered can not be saved in one disk sector because its length exceeds 253 bytes. The line can be executed, but cannot be saved on disk.

Recovery: Shorten the line by breaking it up into two or more smaller lines.

ERR A06

Error: PROGRAM PROTECTED

Cause: A program or program overlay loaded into memory was protected; therefore, no program text in memory can be SAVEd, LISTed, or modified (except by LOAD or CLEAR).

Recovery: Protect Mode must be deactivated with a CLEAR command. (However, executing a CLEAR command also clears all memory.)

ERR A07

Error: ILLEGAL IMMEDIATE MODE STATEMENT

Cause: An attempt was made to execute an illegal statement in Immediate Mode.

Recovery: Delete the illegal statement and reexecute the line.

ERR A08

Error: STATEMENT NOT LEGAL HERE

Cause: The statement cannot be used in this context.

Recovery: Correct the program line.

ERR A09

Error: PROGRAM NOT RESOLVED

Cause: An attempt was made to execute an unresolved program.

Recovery: Resolve the program by running it with RUN.

A.2 SYNTAX ERRORS (NONRECOVERABLE)

ERR S10

Error: MISSING LEFT PARENTHESIS

Cause: A left parenthesis [( ] was expected.

Recovery: Correct the statement text.

ERR S11

Error: MISSING RIGHT PARENTHESIS

Cause: A right parenthesis [ )] was expected.

Recovery: Correct the statement text.

ERR S12

Error: MISSING EQUAL SIGN

Cause: An equal sign (=) was expected.

Recovery: Correct the statement text.

ERR S13

Error: MISSING COMMA

Cause: A comma (,) was expected.

Recovery: Correct the statement text.

ERR S14

Error: MISSING ASTERISK

Cause: An asterisk (*) was expected.

Recovery: Correct the statement text.

ERR S15

Error: MISSING ">" CHARACTER

Cause: The required ">" character is missing from the program statement.

Recovery: Correct the program statement syntax.

ERR S16

Error: MISSING LETTER

Cause: A letter was expected.

Recovery: Correct the statement text.

ERR S17

Error: MISSING HEX DIGIT

Cause: A digit or a letter from A to F was expected.

Recovery: Correct the program text.

ERR S18

Error: MISSING RELATIONAL OPERATOR

Cause: A relational operator (<,=,>,<=,>=,< >) was expected.

Recovery: Correct the statement text.

ERR S19

Error: MISSING REQUIRED WORD

Cause: A required BASIC word is missing (e.g., THEN or STEP).

Recovery: Correct the statement text.

ERR S20

Error: EXPECTED END OF STATEMENT

Cause: The end of the statement was expected. The statement syntax is correct up to the point of the error message, but one or more following characters make the statement illegal.

Recovery: Complete the statement text.

ERR S21

Error: MISSING LINE-NUMBER

Cause: A line-number in the program statement is missing.

Recovery: Correct the statement syntax.

ERR S22

Error: ILLEGAL PLOT ARGUMENT

Cause: An argument in the PLOT statement is illegal.

Recovery: Correct the PLOT statement.

ERR S23

Error: INVALID LITERAL STRING

Cause: A literal string was expected. The length of the literal string must be > = 1 and < = 255.

Recovery: Correct the invalid literal string.

ERR S24

Error: ILLEGAL EXPRESSION OR MISSING VARIABLE

Cause: The expression syntax is illegal or a variable is missing.

Recovery: Correct the syntax, or insert the missing variable.

ERR S25

Error: MISSING NUMERIC-SCALAR-VARIABLE

Cause: A numeric-scalar-variable was expected.

Recovery: Correct the statement text.

ERR S26

Error: MISSING ARRAY-VARIABLE

Cause: An array-variable was expected.

Recovery: Correct the statement text.

ERR S27

Error: MISSING NUMERIC-ARRAY

Cause: A numeric-array is required in the specified program statement syntax.

Recovery: Correct the program statement.

ERR S28

Error: MISSING ALPHA-ARRAY

Cause: An alpha-array is required in the specified program statement syntax.

Recovery: Correct the program statement.

ERR S29

Error: MISSING ALPHANUMERIC-VARIABLE

Cause: An alphanumeric-variable was expected.

Recovery: Correct the statement text.

A.3 PROGRAM ERRORS (NONRECOVERABLE)

ERR P32

Error: START > END

Cause: The starting value is greater than the ending value.

Recovery: Correct the statement in error.

ERR P33

Error: LINE-NUMBER CONFLICT

Cause: The RENUMBER command cannot be executed. The renumbered program text must fit between existing (nonrenumbered) program lines.

Recovery: Correct the RENUMBER command.

ERR P34

Error: ILLEGAL VALUE

Cause: The value exceeds the allowed limit.

Recovery: Correct the program or data.

ERR P35

Error: NO PROGRAM IN MEMORY

Cause: A RUN command was entered but there are no program statements in memory.

Recovery: Enter the program statements or load a program.

ERR P36

Error: UNDEFINED LINE-NUMBER OR ILLEGAL CONTINUE COMMAND

Cause: A referenced line-number is undefined, or the user is attempting to CONTINUE program execution after one of the following conditions has occurred: A Stack or Memory Overflow error, entry of a new variable or a CLEAR command, modification of the user program text, or depressing the RESET Key.

Recovery: Correct the statement text, or rerun the program with RUN.

ERR P37

Error: UNDEFINED MARKED SUBROUTINE

Cause: There is no DEFFN' statement in the program corresponding to the GOSUB' statement that was to be executed.

Recovery: Correct the program.

ERR P38

Error: UNDEFINED FN FUNCTION

Cause: An undefined FN function was referenced.

Recovery: Correct the program by defining the function or referencing it correctly.

ERR P39

Error: FN'S NESTED TOO DEEP

Cause: More than five levels of nesting were encountered when evaluating an FN function.

Recovery: Reduce the number of nested functions.

ERR P40

Error: NO CORRESPONDING "FOR" FOR "NEXT" STATEMENT

Cause: There is no companion FOR statement for a NEXT statement, or a branch was made into the middle of a FOR/NEXT loop.

Recovery: Correct the program.

ERR P41

Error: RETURN WITHOUT GOSUB

Cause: A RETURN statement was executed without first executing a GOSUB or GOSUB' statement (e.g., a branch was made into the middle of a subroutine).

Recovery: Correct the program.

ERR P42

Error: ILLEGAL IMAGE

Cause: The image is not legal in this context. For example, the image referenced by PRINTUSING does not contain a format-specification.

Recovery: Correct the program.

ERR P43

Error: ILLEGAL MATRIX OPERAND

Cause: The same array-name appears on both sides of the equation in a MAT multiplication or MAT transposition statement.

Recovery: Correct the statement.

ERR P44

Error: MATRIX NOT SQUARE

Cause: The dimensions of the operand in a MAT inversion or identity are not equal.

Recovery: Correct the array dimensions.

ERR P45

Error: OPERAND DIMENSIONS NOT COMPATIBLE

Cause: The dimensions of the operands in a MAT statement are not compatible; the operation cannot be performed.

Recovery: Correct the dimensions of the arrays.

ERR P46

Error: ILLEGAL MICROCOMMAND

Cause: A microcommand in the specified $GIO sequence is illegal or undefined.

Recovery: Use only legal or defined microcommands.

ERR P47

Error: MISSING BUFFER VARIABLE

Cause: A buffer (Arg-3) in the $GIO statement was omitted for a data input, data output, or data verify microcommand.

Recovery: Define the buffer if it was omitted.

ERR P48

Error: ILLEGAL DEVICE SPECIFICATION

Cause: The #n file-number in a program statement is undefined, or the device-address is illegal. On the MVP, the selected device is not contained in the Master Device Table; the error is signalled when communication is attempted and *not* when the SELECT statement is executed.

NOTE:

P48 is a recoverable error.

Recovery: Define the specified file-number in a SELECT statement, or correct the device-address.

ERR P49

Error: INTERRUPT TABLE FULL

Cause: Interrupts were defined for more than eight devices. The maximum number of devices allowed is eight.

Recovery: Reduce the number of interrupts.

ERR P50

Error: ILLEGAL ARRAY DIMENSIONS OR VARIABLE LENGTH

Cause: An array dimension or alpha-variable length exceeds the legal limits. The limits are as follows:

one-dimensional array: 1 <= dimension < 65536
two-dimensional array: 1 <= dimension < 256
alpha-variable length: 1 <= length < 125

Recovery: Correct the dimension or variable length.

ERR P51

Error: VARIABLE OR VALUE TOO SHORT

Cause: The length of the variable or value is too small for the specified operation.

Recovery: Correct the program.

ERR P52

Error: VARIABLE OR VALUE TOO LONG

Cause: The length of the variable or value is too long for the specified operation.

Recovery: Correct the statement or command.

ERR P53

Error: NONCOMMON VARIABLES ALREADY DEFINED

Cause: A COM statement was preceded by a noncommon variable definition.

Recovery: Correct the program by making all COM statements the first-numbered lines, or clear the noncommon variables with a CLEAR N command.

ERR P54

Error: COMMON VARIABLE REQUIRED

Cause: The variable in the LOAD DA statement (used to receive the sector address of the next available sector after the load) or the variable containing the program name(s) in a multiple-file LOAD command is not a common variable.

Recovery: Redefine the variable to be common.

ERR P55

Error: UNDEFINED VARIABLE (PROGRAM NOT RESOLVED)

Cause: An array which was not defined properly in a DIM or COM statement is referenced in the program, or a variable has been encountered which was not defined because the program was not resolved (e.g., a Special Function Key was used to initiate program execution, but the program was never RUN).

Recovery: Correct the text or RUN the program.

ERR P56

Error: ILLEGAL SUBSCRIPTS

Cause: The variable subscripts exceed the defined array dimensions or the dimensions of the variable, which were defined in a DIM or COM statement, do not agree with the array definition.

Recovery: Change the variable subscripts or the variable definition in a DIM or COM statement.

ERR P57

Error: ILLEGAL STR ARGUMENTS

Cause: The STR function arguments exceed the maximum defined length of the alpha-variable.

Recovery: Correct the STR arguments, or redefine the alpha-variable.

ERR P58

Error: ILLEGAL FIELD/DELIMITER SPECIFICATION

Cause: The field or delimiter specification in a $PACK or $UNPACK statement is illegal.

Recovery: Correct the illegal field or delimiter specification.

ERR P59

Error: ILLEGAL REDIMENSION

Cause: The space required to redimension the array is greater than the space initially reserved for the array.

Recovery: Reserve more space for the array in the initial DIM or COM statement, or redimension the array to fit in the available space.

A.4 COMPUTATIONAL ERRORS (RECOVERABLE)

ERR C60

Error: UNDERFLOW

Cause: The absolute value of the calculated result was less than 1E-99 but greater than zero.

Recovery: Correct the program or the data. Underflow errors can be suppressed by executing SELECT ERROR > 60; a default value of zero will be used.

ERR C61

Error: OVERFLOW

Cause: The absolute value of the calculated result was greater than 9.999999999999E+99.

Recovery: Correct the program or the data. Overflow errors can be suppressed by executing SELECT ERROR > 61; a default value of ± 9.999999999999E+99 will be used.

ERR C62

Error: DIVISION BY ZERO

Cause: Division by a value of zero is a mathematically undefined operation.

Recovery: Correct the program or the data. A division-by-zero error can be suppressed by executing SELECT ERROR > 62; a default value of ±9.999999999999E+99 will be used.

ERR C63

Error: ZERO DIVIDED BY ZERO OR ZERO ↑ ZERO

Cause: A mathematically indeterminate operation (0/0 or 0↑0) was attempted.

Recovery: Correct the program or the data. Errors of this type can be suppressed by executing SELECT ERROR > 63; a default value of 0 will be used.

ERR C64

Error: ZERO RAISED TO NEGATIVE POWER

Cause: Zero raised to a negative power is a mathematically undefined operation.

Recovery: Correct the program or the data. This error can be suppressed by executing SELECT ERROR > 64; a default value of 9.999999999999E+99 will be used.

ERR C65

Error: NEGATIVE NUMBER RAISED TO NONINTEGER POWER

Cause: This is a mathematically undefined operation.

Recovery: Correct the program or the data. This error can be suppressed by executing SELECT ERROR > 65; a default value of the absolute value of the negative number raised to the noninteger power will be used.

ERR C66

Error: SQUARE ROOT OF NEGATIVE VALUE

Cause: This is a mathematically undefined operation.

Recovery: Correct the program or the data. This error can be suppressed by executing SELECT ERROR > 66; a default value of SQR(ABS(X)), where X is the negative value, will be used.

ERR C67

Error: LOG OF ZERO

Cause: This is a mathematically undefined operation.

Recovery: Correct the program or the data. This error can be suppressed by executing SELECT ERROR > 67; a default value of -9.999999999999E±99 will be used.

ERR C68

Error: LOG OF NEGATIVE VALUE

Cause: This is a mathematically undefined operation.

Recovery: Correct the program or the data. This error can be suppressed by executing SELECT ERROR > 68; a default value of the LOG of the absolute value of the number will be used.

ERR C69

Error: ARGUMENT TOO LARGE

Cause: The absolute value of the SIN, COS, or TAN function is >= 1E+10; the system cannot evaluate the function meaningfully. Or, the absolute value of the ARCSIN, ARCCOS, or ARCTAN argument is > 1.0; the value of the function is mathematically undefined.

Recovery: Correct the program or the data. This error can be suppressed by executing SELECT ERROR > 69; a default value of zero will be used.

A.5 EXECUTION ERRORS (RECOVERABLE)

ERR X70

Error: INSUFFICIENT DATA

Cause: There are not enough DATA values to satisfy READ or RESTORE statement requirements.

Recovery: Correct the program to supply additional DATA, or modify the READ or RESTORE statement.

ERR X71

Error: VALUE EXCEEDS FORMAT

Cause: The number of integer digits in the PACK or CONVERT image specification is insufficient to express the value of the number being packed or converted.

Recovery: Change the image specification.

ERR X72

Error: SINGULAR MATRIX

Cause: The operand in a MAT inversion statement is singular and cannot be inverted.

Recovery: Correct the program or the data. Inclusion of a normalized determinant parameter in the MAT INV statement will eliminate this error; however, the determinant must be checked by the application program following the inversion.

ERR X73

Error: ILLEGAL INPUT DATA

Cause: The value entered as requested by an INPUT statement is expressed in an illegal format.

Recovery: Reenter the data in the correct format starting with the erroneous number, or terminate run with RESET and RUN again. Alternatively, LINPUT can be used to enter the data, and the data can be verified within the application program.

ERR X74

Error: WRONG VARIABLE TYPE

Cause: The variable type (alpha or numeric) does not agree with the data type. For example, during a DATALOAD DC operation a numeric value was expected, but an alphanumeric value was read.

Recovery: Correct the program or the data, or verify that the proper file is being accessed.

ERR X75

Error: ILLEGAL NUMBER

Cause: The format of a number is illegal.

Recovery: Correct the number.

ERR X76

Error: BUFFER EXCEEDED

Cause: The buffer variable is too small or too large for the specified operation.

Recovery: Change the size of the buffer variable.

ERR X77

Error: INVALID PARTITION REFERENCE

Cause: The partition referenced by SELECT @PART or $RELEASE TERMINAL is not defined, or the name specified by DEFFN @PART has already been used.

Recovery: Use the proper partition name; wait for the global partition to be defined.

A.6 DISK ERRORS (RECOVERABLE)

ERR D80

Error: FILE NOT OPEN

Cause: The file was not opened.

Recovery: Open the file before attempting to read from it or write to it.

ERR D81

Error: FILE FULL

Cause: The file is full; no more information may be written into the file.

Recovery: Correct the program, or use MOVE to move the file to another platter and reserve additional space for it.

ERR D82

Error: FILE NOT IN CATALOG

Cause: A nonexistent file name was specified, or an attempt was made to load a data file as a program file or a program file as a data file.

Recovery: Make sure the correct file name is being used, the proper disk platter is mounted, and the proper disk drive is being accessed.

ERR D83

Error: FILE ALREADY CATALOGED

Cause: An attempt was made to catalog a file with a name that already exists in the Catalog Index.

Recovery: Use a different name, or catalog the file on a different platter.

ERR D84

Error: FILE NOT SCRATCHED

Cause: An attempt was made to rename or write over a file that has not been scratched.

Recovery: Scratch the file before renaming it.

ERR D85

Error: CATALOG INDEX FULL

Cause: There is no more room in the Catalog Index for a new name.

Recovery: Scratch any unwanted files and compress the catalog using a MOVE statement, or mount a new disk platter and create a new catalog.

ERR D86

Error: CATALOG END ERROR

Cause: The end of the Catalog Area is defined to fall within the Catalog Index, or an attempt has been made to move the end of the Catalog Area to fall within the area already occupied by cataloged files (with MOVE END), or there is no room left in the Catalog Area to store more information.

Recovery: Either correct the SCRATCH DISK or MOVE END statement, increase the size of the Catalog Area with MOVE END, scratch unwanted files and compress the catalog with MOVE, or open a new catalog on a separate platter.

ERR D87

Error: NO END-OF-FILE

Cause: No end-of-file record was recorded in the file by using either a DATASAVE DC END or a DATASAVE DA END statement and, therefore, none could be found by the DSKIP END statement.

Recovery: Correct the file by writing an end-of-file trailer after the last data record.

ERR D88

Error: WRONG RECORD TYPE

Cause: A program record was encountered when a data record was expected, or a data record was encountered when a program record was expected.

Recovery: Correct the program. Be sure the proper platter is mounted and be sure the proper drive is being accessed.

ERR D89

Error: SECTOR ADDRESS BEYOND END-OF-FILE

Cause: The sector address being accessed by the DATALOAD DC or DATASAVE DC operation is beyond the end-of-file. This error can be caused by a bad disk platter.

Recovery: Run the program again. If the error persists, use a different platter or reformat the platter. If the error still exists, contact your Wang Service Representative.

A.7 I/O ERRORS (RECOVERABLE)

ERR 190

Error: DISK HARDWARE ERROR

Cause: The disk did not respond properly to the system at the beginning of a read or write operation; the read or write has not been performed.

Recovery: Key RESET and run the program again. If the error persists, ensure that the disk unit is powered on and that all cables are properly connected. If the error still occurs, contact your Wang Service Representative.

ERR 191

Error: DISK HARDWARE ERROR

Cause: A disk hardware error occurred because the disk is not in file-ready position. If the disk is in LOAD mode or if the power is not turned on, for example, the disk is not in file-ready position and a disk hardware error is generated.

Recovery: Key RESET and run the program again. If the error recurs, check to ensure that the program is addressing the correct disk platter. Be sure the disk is turned on, properly set up for operation, and that all cables are properly connected. Set the disk into LOAD mode and then back into RUN mode by using the RUN/LOAD selection switch. If the error persists, call your Wang Service Representative.

> **NOTE:**
>
> The disk must *never* be left in LOAD mode for an extended period of time when the power is on.

ERR 192

Error: TIMEOUT ERROR

Cause: The device did not respond to the system in the proper amount of time (time-out). In the case of the disk, the read or write operation has not been performed.

Recovery: Key RESET and run the program again. If the error persists, be sure that the disk platter has been formatted. If the error still occurs, contact your Wang Service Representative.

ERR 193

Error: FORMAT ERROR

Cause: A format error was detected during a disk operation. This error indicates that certain sector-control information is invalid. If this error occurs during a read or write operation, the platter may need to be reformatted. If this error occurs during formatting, there may be a flaw on the platter's surface.

Recovery: Format the disk platter again. If the error persists, replace the media. If the error continues, call your Wang Service Representative.

ERR 194

Error: FORMAT KEY ENGAGED

Cause: The disk format key is engaged. The key should be engaged only when formatting a disk.

Recovery: Turn off the format key.

ERR 195

Error: DEVICE ERROR

Cause: A device fault occurred indicating that the disk could not perform the requested operation. This error may result from an attempt to write to a write-protected platter.

Recovery: If writing, make sure the platter is not write-protected. Repeat the operation. If the error persists, power the disk off and then on, and then repeat the operation. If the error still occurs, call your Wang Service Representative.

ERR 196

Error: DATA ERROR

Cause: For read operations, the checksum calculations (CRC or ECC) indicate that the data read is incorrect. The sector read may have been written incorrectly. For disk drives that perform error correction (ECC), the error correction attempt was unsuccessful. For write operations, the LRC calculation indicates that the data sent to the disk was incorrect. The data has not been written.

Recovery: For read errors, rewrite the data. If read errors persist, the disk platter should be reformatted. For write errors, the write operation should be repeated. If write errors persist, ensure that all cable connections are properly made and are tight. If either error persists, contact your Wang Service Representative.

ERR 197

Error: LONGITUDINAL REDUNDANCY CHECK ERROR

Cause: A longitudinal redundancy check error occurred when reading or writing a sector. Usually, this error indicates a transmission error between the disk and the CPU. However, the sector being accessed may have been previously written incorrectly.

Recovery: Run the program again. If the error persists, rewrite the flawed sector. If the error still persists, call your Wang Service Representative.

ERR 198

Error: ILLEGAL SECTOR ADDRESS OR PLATTER NOT MOUNTED

Cause: The disk sector being addressed is not on the disk, or the disk platter is not mounted. (The maximum legal sector address depends upon the disk model used.)

Recovery: Correct the program statement in error, or mount a platter in the specified drive.

ERR 199

Error: READ-AFTER-WRITE ERROR

Cause: The comparison of read-after-write to a disk sector failed, indicating that the information was not written properly. This error usually indicates that the disk platter is defective.

Recovery: Write the information again. If the error persists, try a new platter; if the error still persists, call your Wang Service Representative.

Recovery: Correct the program statement in error, or mount a platter in the specified drive.

ERR 199

Error: READ-AFTER-WRITE ERROR

Cause: The comparison of read-after-write to a disk sector failed, indicating that the information was not written properly. This error usually indicates that the disk platter is defective.

Recovery: Write the information again. If the error persists, try a new platter; if the error still persists, call your Wang Service Representative.

EXCERCISES

HOW TO USE WP FUNCTION KEYS

DOCUMENT FILING

APPENDIX A. DISPLAY GRAPHICS

The following symbols (graphics) represent certain functions, and are automatically initiated by touching the appropriate key.

Key touched:	The screen displays:
INDENT	—
PAGE	⊥
CENTER	♦
DEC TAB	⌐
MERGE	↕
DON'T MERGE	⊥
NOTE	!!
STOP	■
TAB	►
RETURN	◄
FORMAT	⊥
↑↓ (superscript)	↑
↑↓ (subscript)	↓

APPENDIX Q. SUMMARY OF SPECIAL INSTRUCTION KEYS

1. AUTOSCORE MODE

a. Purpose: To underscore (underline) new text and inserted characters as they are entered by the operator.

b. Sequence: Touch COMMAND, touch the Underscore Key, type in the text. It is automatically underscored.

c. Notes: To exit from Autoscore Mode, touch CANCEL.

To deunderscore text while in "Autoscore Mode," move the cursor to the character(s) to be deunderscored, and touch the Underscore Key to eliminate the underscoring.

2. BACKSPACE

a. Purpose: To move the cursor backwards through text. Usually to strike over incorrect text.

b. Sequence: Touch BACKSPACE. Touching and holding backspaces repetitively.

c. Notes: BACKSPACE is also used to dehighlight text during COPY, DELETE, MOVE, or REPLACE.

3. CANCEL

a. Purpose: To terminate any function or operation before the EXECUTE key has been touched.

b. Sequence: Touch CANCEL.

c. Notes: CANCEL, followed by EXECUTE, is used to exit from Document Create or Document Edit.

If CANCEL is accidentally touched while in Document Create or Document Edit, simply touch it again.

4. CENTER

a. Purpose: To center text automatically on a line.

b. Sequence: Touch CENTER, type text, touch RETURN.

c. Notes: A centered line always has the diamond graphic at the beginning of the line.

If text is already present in a line, inserting a CENTER centers it.

5. COPY

a. Purpose: To highlight consecutive text in one part of a document, and copy it to another location in the same document. Both parts of the document will contain the same exact text.

b. Sequence: Position cursor to beginning of text to be copied, touch COPY, highlight the text to be copied, touch EXECUTE, reposition cursor to beginning of new location, touch EXECUTE.

c. Notes: Everything highlighted is copied. Highlight by moving the cursor or by touching any key; the system highlights up to and including any key touched.

To highlight up to any letter, touch that letter.

To highlight a word, touch the space bar.

To highlight a sentence, touch the period.

To highlight a paragraph, touch the RETURN.

To highlight "Wang Laboratories," touch "s."

To highlight across screenloads or pages, touch NEXT SCRN or GO TO PAGE.

To dehighlight, use BACKSPACE, the Cursor Control keys, PREV SCRN, or GO TO PAGE.

6. CURSOR CONTROLS

a. Purpose: To position the cursor on the screen, or to move the cursor to the beginning or end of the screen.

b. Sequence: Touch one of the four cursor keys (with the arrows up, down, left, or right). The cursor moves in the direction indicated. The keys repeat automatically when held down.

c. Notes: Touching and holding the "up" key returns to "home," or the first position of the screen. Touching and holding the "down" key returns to "reverse home," or the last position on the screen.

The cursor control keys move the cursor through the text without changing it.

See also GO TO PAGE.

7. DECIMAL TAB

a. Purpose: To automatically align columns of numbers on their decimal points, or to right justify any column of text or figures without decimal points.

b. Sequence: Touch DEC TAB, type text or numbers. Touch DEC TAB, then type numbers again for each other column on that line. Touch RETURN at the end of the line.

c. Notes: Decimal points are aligned on the next preset tab position.

The graphic symbol ⌙ appears to the left of each number that has been decimally tabbed.

8. DELETE

a. Purpose: To highlight consecutive text in a document, and to remove it from that document.

b. Sequence: Position the cursor to beginning of the text to be deleted, touch DELETE, highlight the text to be deleted, touch EXECUTE.

c. Notes: Everything highlighted is deleted. Highlight by moving the cursor or by touching any key; the system highlights up to and including the letter or symbol touched.

To highlight up to any letter, touch that letter.

To highlight a word, touch the space bar.

To highlight a sentence, touch the period.

To highlight a paragraph, touch the RETURN.

To highlight "Wang Laboratories," touch "s."

To highlight across screenloads or pages, touch NEXT SCRN or GO TO PAGE.

To dehighlight, use BACKSPACE, the Cursor Control keys, PREV SCRN, or GO TO PAGE.

9. DOCUMENT MARKING (Release 11)

a. Purpose: To mark a specific location in a document and later return to this same location.

b. Sequence: Touch COMMAND, touch NOTE, and go anywhere within the Document. To return to the original location, touch GO TO PAGE and touch NOTE.

c. Notes: Only one point can be marked and noted at any one time. The cursor always returns to the location last marked.

Document Marking is lost when CANCEL, EXECUTE is touched to terminate Document Create or Edit.

If text containing the marked point is deleted, the Work Station returns the cursor as close as possible to the former marked location.

10. EXECUTE

a. Purpose: To signal the system that the present course of action is acceptable to the operator.

b. Sequence: Touch EXECUTE.

c. Notes: Usually EXECUTE causes the system to proceed to the next menu.

EXECUTE is used after CANCEL to exit from the Create Document and Edit Document modes.

11. FOOTER

a. Purpose: To create the footers at the bottom of pages which identify documents, usually from page 2 on.

b. Sequence: Touch GO TO PAGE, type F, touch INSERT, type the footer material. The footer will now print on each page. Touch GO TO PAGE, type in a page number, and touch EXECUTE to return to the document.

c. Notes: For automatic page numbering, type a pound sign (#) as part of the footer material. Page numbers replace the pound sign when the document prints.

Footer lines are not counted in the line count at the top of each screen.

Only one footer is allowed per document.

A footer is "left behind" when a document is copied and is not available on a merged document.

It is usually advisable to begin each footer with one or more blank lines so that the footer is spaced below the last line of text.

12. FORMAT

a. Purpose: To set or change the right hand margin, tab settings, and/or vertical print spacing between lines.

b. Sequence: (Create a New Format) Touch FORMAT, reset whatever you wish, touch EXECUTE.

(Revise the Last Format) Touch SHIFT + FORMAT, reset whatever you wish, touch EXECUTE.

(Not 2200/wp) (Revise the Last Format to equal the one before it) Touch SHIFT + FORMAT, Touch FORMAT again, touch EXECUTE.

(Delete the Last Format) Touch SHIFT + FORMAT, touch DELETE.

c. Notes: Vertical print spacing is shown in position 2 of the Format Line:

0 — zero or no spacing (overstrike)
Q — quarter spacing
H — half spacing
1 — single spacing
W — one and one-half spacing
2 — double spacing
3 — triple spacing

Tabs are entered in the Format Line by positioning the cursor and touching the TAB key. Tabs are removed in the Format Line by spacing over them.

The right margin is set in the Format Line by positioning the cursor and touching RETURN. The existing right margin symbol disappears.

Touching SHIFT + FORMAT simultaneously brings the cursor inside the last Format Line so revisions can be made.

Touching FORMAT by itself creates a new Format Line.

13. GLOSSARY

a. Purpose: To automatically have the system recall and enter into a document some previously-created text or instructions.

b. Sequence: Touch the Glossary key (GL) on the top right of the keyboard. Touch the key corresponding to the name of the Glossary entry to be recalled.

c. Notes: All Glossary entries must first be "Attached" to the Work Station before they can be recalled.

See the Wang Word Processor Glossary User Manual for more information.

14. GO TO PAGE

a. Purpose: To replace the current screen with any desired page of a document.

b. Sequence: Touch GO TO PAGE, type the number of the page desired, touch EXECUTE.

c. Notes: GO TO PAGE, 1, goes to the first character on the current page.

GO TO PAGE, ↓, goes to the last character on the current page.

GO TO PAGE, —, goes to the last character on the current line.

GO TO PAGE, —, goes to the first character on the current line.

GO TO PAGE, Page Number, ↑ or EXECUTE, goes to the first character on the specified page.

GO TO PAGE, Page Number, ↓, goes to the last character on the specified page.

GO TO PAGE, Page Number, —, goes to the last character of the current line number on the specified page.

GO TO PAGE, Page Number, —, goes to the first character of the current line number on the specified page.

GO TO PAGE, NEXT SCRN, goes to the next page of a document.

GO TO PAGE, PREV SCRN, goes to the previous page of a document.

GO TO PAGE, F, (or f) is used to create or edit a footer.

GO TO PAGE, H, (or h) is used to create or edit a header.

GO TO PAGE, W, (or w) is used to go to the Work Page.

15. HEADER

a. Purpose: To create the headings at the top of pages which identify documents, usually from page 2 on.

b. Sequence: Touch GO TO PAGE, type H, touch INSERT, type the header material, touch EXECUTE. The header will now print on each page. Touch GO TO PAGE, type in a page number, touch EXECUTE, to return to the document.

c. Notes: For automatic page numbering, type a pound sign (#) as part of the header material. Page numbers replace the pound sign when the document prints.

Header lines are not counted in the line count at the top of each screen.

Only one header is allowed per document.

A header is "left behind" when a document is copied and is not available on a merged document.

It is usually advisable to end each header with one or more blank lines so that the header is spaced above the first line of text.

~~16~~. HYPHENATION (Globally) (Release 11)

a. Purpose: To automatically find each instance in a document where a hyphenation decision is necessary, and to allow the operator to insert a hyphen.

b. Sequence: Touch COMMAND, touch the hyphen key (-), enter the zone length (minimum 3, maximum 99), touch EXECUTE. Then touch:

1) EXECUTE or Hyphen (-) to insert a hyphen

2) Backspace, space, left or right cursor to move the cursor, then EXECUTE or Hyphen (-).

3) SEARCH to make no changes to this word but find the next decision.

4) CANCEL to terminate Global Hyphenation.

c. Notes: Global Hyphenation searches for hot zones greater than or equal to the zone length entered, and highlights the portion of the next word that can fit into that hot zone.

Minimum hot zone is three (3). Entering a hot zone of 3 causes the system to stop and ask for a hyphenation decision every time there are 3 or more available spaces at the end of a line. Results in a lot of hyphenation decisions.

Maximum hot zone is ninety-nine (99). Results in very few hyphenation decisions.

Global Hyphenation removes all old hyphens as it goes.

17. INDENT

a. Purpose: To indent paragraphs or any section of text automatically.

b. Sequence: Touch INDENT, then type your text.

c. Notes: INDENT remains effective through subsequent lines until RETURN is touched. (All these lines are also indented.)

INDENT moves text to the first Tab setting on that line. For a greater indent, touch INDENT again until the correct tab setting is reached.

If you change the tab setting by changing the Format line, the Indented material also changes its position to correspond to this new format. The graphic symbol] appears to the left of all text that has been indented.

18. INSERT

a. Purpose: To insert any amount of text into an existing document.

b. Sequence: Position cursor to where text is to be added, touch INSERT, type new text, touch EXECUTE.

c. Notes: All text being inserted is highlighted. The system automatically realigns the rest of the document after INSERT.

~~19.~~ MERGE (Release II)

a. Purpose: To create letters or documents with provision for the future addition of "variable" information from a second document. To combine two documents into one.

b. Sequence: Type the master document, touching MERGE where the variable information is to be inserted. Then type the variable document(s) as a series of inserts separated by the MERGE symbol.

When MERGE PRINT is selected on the SPECIAL FUNCTION MENU, these two documents combine into one.

c. Notes: The MERGE graphic (↕) is not printed and takes up no space on the printout.

20. MOVE

a. Purpose: To highlight consecutive text in one part of a document and then move it to another part of that document.

b. Sequence: Position cursor to beginning of text to be moved, touch MOVE, highlight text to be moved, touch EXECUTE, reposition cursor to where highlighted text is to be moved, touch EXECUTE.

c. Notes: Everything highlighted is moved. Highlight by moving the cursor or by touching any key. The system highlights up to and including the letter or symbol touched.

To highlight up to any letter, touch that letter.

To highlight a word, touch the space bar.

To highlight a sentence, touch the period.

To highlight a paragraph, touch the RETURN.

To highlight "Wang Laboratories," touch "s."

To highlight across screenloads or pages, touch NEXT SCRN or GO TO PAGE.

To dehighlight, use BACKSPACE, the Cursor Control keys, PREV SCRN, or GO TO PAGE.

21. NEXT SCREEN/PREVIOUS SCREEN

a. Purpose: To view any screenload of text in a document.

b. Sequence: Touch NEXT SCREEN to view text further in the document than is shown on the screen. Touch PREVIOUS SCREEN to view text that is earlier in the document than is shown on the screen.

c. Notes: The system displays a prompt when you have reached either the beginning or the end of the document.

See also GO TO PAGE.

22. NOTE

a. Purpose: To allow non-printing comments (notes) to appear on the screen but not on the printed document.

b. Sequence: Touch NOTE, type the comments, touch NOTE, RETURN, PAGE, or FORMAT.

c. Notes: Everything typed between NOTE and either the next NOTE, RETURN, PAGE, or FORMAT is be printed.

The graphic symbol !! (two exclamation points) appears on the screen every time NOTE is touched.

Notes can be printed out by selecting option "With Notes" on the Printer Playout Menu.

23. PAGE

a. Purpose: To define the end of a page.

b. Sequence: Position cursor to where you want a page break to occur, touch PAGE.

c. Notes: Page breaks can be inserted anywhere, but are easier to see and work with if used after a RETURN.

PAGE brings a copy of the last-used Format Line to the head of the new page.

To make a "required" or "hard" Page Break, touch CENTER, then PAGE.

~~24.~~ REPAGINATION (Release 11)

a. Purpose: To automatically search through a document, deleting old page breaks, and allowing an operator to insert new page breaks in logical places.

b. Sequence: Touch COMMAND, touch PAGE, enter the page length (number of lines of text, excluding headers and footers), touch EXECUTE. Then touch:

1) PAGE or EXECUTE to insert a page break where the system stops.

2) North or South cursor to where you want the page break to be, and touch PAGE or EXECUTE.

3) CANCEL to terminate Repagination.

c. Notes: "Hard" or "required" Page Breaks (a center code followed by a Page Break) are not automatically repaginated by the system.

At any time you can move the cursor from where the system puts it before touching PAGE or EXECUTE.

See also PAGE.

25. REPLACE

a. Purpose: To highlight consecutive text in a document and then replace it with other text.

b. Sequence: Position cursor at beginning of text to be replaced, touch REPLACE, highlight text to be replaced, touch EXECUTE, type the new text, touch EXECUTE.

c. Notes: Everything highlighted is replaced. Highlight by moving the cursor or by touching any key. The system highlights up to and including the letter or symbol touched.

To highlight up to any letter, touch that letter.

To highlight a word, touch the space bar.

To highlight a sentence, touch the period.

To highlight a paragraph, touch the RETURN.

To highlight "Wang Laboratories," touch "s."

To highlight across screenload or pages, touch NEXT SCRN or GO TO PAGE.

To dehighlight, use BACKSPACE, the Cursor Control keys, PREV SCRN, or GO TO PAGE.

26. REPLACE (GLOBALLY - all instances of a character sequence)

a. Purpose: To highlight all instances of defined consecutive text in a document and then replace them with other text.

b. Sequence: Position cursor at first instance of text to be replaced, touch SHIFT + REPLACE, highlight text to be replaced, touch EXECUTE, type the new text, touch EXECUTE. Then repeatedly touch EXECUTE to replace all other instances of that text, or touch SEARCH to selectively skip a particular replacement, or touch SHIFT + REPLACE again to automatically replace all instances of that text.

c. Notes: Touch CANCEL to exit from REPLACE if you don't wish to replace the text.

Everything highlighted is replaced. Highlight by moving the cursor or by touching any key. The system highlights up to and including the letter or symbol touched.

To highlight up to any letter, touch that letter.

To highlight a word, touch the space bar.

To highlight a sentence, touch the period.

To highlight a paragraph, touch the RETURN.

To highlight "Wang Laboratories," touch "s."

To highlight across screenloads or pages, touch NEXT SCRN or GO TO PAGE.

To dehighlight, use BACKSPACE, the Cursor Control keys, PREV SCRN, or GO TO PAGE.

27. RETURN

a. Purpose: To end a line of type and bring the cursor to the start of the next line.

b. Sequence: Touch RETURN.

c. Notes: The graphic symbol ◄ appears whenever RETURN is touched.

Use at the end of a paragraph or at the end of a short line, (for example, name and address lines). It is not necessary inside the body of text, as the system handles it automatically.

28. SEARCH

a. Purpose: To search through a document and stop at any defined character sequence.

b. Sequence: Touch SEARCH, type in the character sequence. The system stops at the first instance of that sequence. To find the next instance of that sequence, touch SEARCH or EXECUTE. Keep touching SEARCH or EXECUTE to find all instances of that character sequence.

c. Notes: When you are at any character sequence you can perform any editing function (REPLACE, MOVE, etc.).

To exit from SEARCH, touch any key other than SEARCH.

SHIFT + SEARCH starts the Search from the beginning of the document. SEARCH, by itself, starts the Search from the current cursor location in the document.

29. STOP (Future)

a. Purpose: To stop the printer. Usually for changing the printwheel or sometimes, the forms.

b. Sequence: Type text, touch STOP, type the symbol(s) you want from the other printwheel, touch STOP, continue to type the text for the original printwheel.

c. Notes: STOP is displayed on the screen as a small square (■). It prints as a blank.

When the STOP graphic is encountered by the printer, it stops printing, lights the CHANGE DAISY button, and sounds a tone.

30. SUBSCRIPT, SUPERSCRIPT

a. Purpose: To allow the printer to move up and/or down one half (1/2) line from the main typing line to create subscripts and/or superscripts.

b. Sequence: (for SUBSCRIPT) Touch SUBSCRIPT (↑↓), type the subscripted characters, touch SUPERSCRIPT (SHIFT — ↑↓) to return back up to the main typing line.

(for SUPERSCRIPT) Touch SUPERSCRIPT (SHIFT + ↑↓), type the superscripted characters, touch SUBSCRIPT (↑↓) to return back down to the main typing line.

c. Notes: The graphic symbol ↓ appears whenever SUBSCRIPT (↑↓) is touched. This is ignored in printing. (H↓2↑0 prints as H_2O.)

The graphic symbol ↑ appears whenever SUPERSCRIPT (SHIFT + ↑↓) is touched. This is ignored in printing. (X↑2 prints as X^2.)

Formulas *cannot* be created with more than one level of subscript or more than one level of superscript with SUBSCRIPT/SUPERSCRIPT. To create multi-level formulas, use Index and Half-spacing as described in the Operator's Guide, Section 11.4.

Formulas or equations *can* be created with both subscripts and superscripts, as long as there is only one level of each.

If single-spacing or less is used in the Foirmat Line, super/subscripts are placed 1/4 of a line up or down. If 1 1/2 (W) spacing or more is used in the Format Line, super/subscripts are placed 1/2 of a line up or down.

You must have an equal number of subscripts and superscripts on each line of text. For example, for each subscript, you must later have a superscript to return to the main typing line, and vice versa.

31. SUPER COPY

a. Purpose: To highlight consecutive text in one document and copy it to any location in another document. Both documents will then contain this same text.

b. Sequence: Position cursor where the text is to be entered, touch SHIFT + COPY, enter the Document I.D. which has the text to be copied, position the cursor where copying is to begin, touch EXECUTE, highlight the text, touch EXECUTE.

32. SUPER MOVE

a. Purpose: To highlight consecutive text in one document and move it to another document.

b. Sequence: Position cursor where the text is being moved to. Touch SHIFT and COPY, enter the document I.D. of the text to be moved, position the cursor where the move begins, touch EXECUTE, highlight desired text, and touch EXECUTE.

c. Notes: Everything highlighted will be moved. You can highlight by moving the cursor or by touching any key. The system highlights up to and including any key touched.

To highlight up to any letter touch that letter.

To highlight a word, touch the Space Bar.

To highlight a sentence, touch the period.

To highlight a paragraph, touch the RETURN.

To highlight "Wang Laboratories," touch "s".

To dehighlight, use BACKSPACE or the Cursor Control keys.

33. TAB

a. Purpose: To indent the beginning of a paragraph or other text not on the left margin.

b. Sequence: Touch TAB as on a standard typewriter.

c. Notes: The graphic symbol ► appears whenever TAB is touched.

Tabs are preset by the system at whatever is the standard for your company.

34. WORK PAGE

a. Purpose: To hold special notes or information, separate from the document, for the operator's use.

b. Sequence: Touch GO TO PAGE and w. To return to the document, touch GO TO PAGE and any page number from the document.

c. Notes: The Work Page does not print out.

It only consists of one page, able to hold 120 screenloads.

Any editing function can be used within the Work Page.

APPENDIX E. HELPFUL HINTS

1. Most functions/operations can only be performed one at a time. For example, you cannot 'replace' while 'inserting'.
2. Never worry about the amount of text to be inserted or deleted, since the system automatically adjusts any amount to fit between the margins set in the last format.
3. It is better to insert page breaks as a document is initially being created, rather than after the document is entered in its entirety.
4. If the CANCEL Key is mistakenly touched when creating or editing, the system prompts: "End of Edit?". Simply touch the CANCEL Key once again to exit from this condition.
5. Footnotes can be handled either of two ways:

   1) Footnotes can be input at the end of a document. Then before final printing, when the document is recalled on the display, the line count per page can be reviewed, taking footnote placement into consideration. Then MOVE can be used to place the footnotes at their appropriate locations within the document.

   or

   2) The same as stated above, but COPY, rather than MOVE is used to place the footnotes at their appropriate positions. COPY achieves the same results as MOVE, and it also provides a list of all footnotes at the end of the document.

6. Characters can be repeated by simultaneously touching the SPACE BAR and the character key to be repeated.
7. All display graphics are considered text characters by the system; therefore, all creating and editing functions may be performed on them.
8. There is never a need to worry about the printer continuing to print when out of paper. If the printer runs out of paper it is automatically deselected, a tone sounds, and the CHANGE PAPER lamp illuminates.
9. Any number of documents can be queued at one time. The queue is limited only by the number of documents on each disk/diskette.
10. Do not use the lowercase letter 'l' for the digit '1'. This simplifies editing operations.
11. When typing page breaks, the following rules should be observed:

    1) When the line preceding a page break is to be justified, the page break should be the last character on that line and should be input directly after the last character of the last word with no space between it and the page break.

    2) When the line preceding a page break is not to be justified, for example, a half-line ending a paragraph, the page break should appear on a line by itself with the last line of text ending with a return.

12. Lines-per-Page for continuous envelopes is determined by the size of the envelopes. For envelope size, measure from the top of the first envelope to the top of the next envelope. Then use the scale of six lines per inch. For example, if the measurement is 3 1/2 inches, lines per page would be set at 21. (6 lines per inch x 3 1/2 inches = 21 lines per page.)

13. The following shows the difference between various keys and their functions:

FORMAT	vs.	SHIFT & FORMAT
Allows the operator to enter a new format at any point in a document.		Allows the operator to revise the last existing format (from where the cursor is currently positioned in a document).
MERGE PRINT	vs.	MERGE INSTRUCTION
A Special Print Function whereby two documents, each containing appropriate Merge instructions, are printed out as a single document.		The key used to indicate the location where a merge is to take place.
SEARCH	vs.	SHIFT & SEARCH
The system begins searching from where the cursor is currently positioned in the document.		The system automatically starts searching from the beginning of the document.
MOVE	vs.	SHIFT & MOVE
Allows specified text to be moved from one location in a document to another location in the same document.		Allows text to be moved from one document to a specified location in another document.
COPY	vs	SHIFT & COPY
Allows text to be copied from one location in a document to another location in the same document.		Allows text to be copied from one document to a specified location in another document.

14. When defining a region for Move, Copy, Delete, Replace, Global Replace, Super Copy, or Super Move, touching the SEARCH Key and then a character key moves the cursor to the next such character on the page, even if it is on a different screenload. If no instance of this character is located, the cursor goes to the bottom of the page and displays the message "Cannot find one."

15. During any Move, Copy, Super Move, or Super Copy, a copy of the format applicable at the first character of the highlighted region can be included with the text to be relocated. The procedure is to touch the FORMAT Key while the cursor is positioned under this first character. The system sounds a tone and displays "Format copied" in the upper right corner of the screen. If the text is then relocated to a position immediately following a Format Line, the 'copied' format overrides the previous one. If it is relocated into the middle of text, the 'copied' format precedes it.

16. Whenever replacing, deleting, moving, or copying text, touching any character, special function, or format key positions the cursor to its next occurrence and highlights all text in between.

17. Text following an indented paragraph may be centered between the start of the indented paragraph and the right margin by entering a center graphic immediately following the indented text. Touching RETURN would then terminate both the centering and the indenting.

18. Whenever the prompt "Please enter Document Id:_____" appears on the screen, the PREV SCREEN or NEXT SCREEN key can be touched to display the document I.D. numbers located on the System. If there is no number present, the NEXT SCREEN Key displays the lowest I.D. number presently on the System. Each time it is touched, the next highest number appears. The PREV SCREEN key works in reverse, the highest number is displayed and counts down. If a document I.D. number is already displayed, touching PREV SCREEN and NEXT SCREEN starts the count from that point, working up or down.

This is an exercise in creating and editing a word processing document.

1. Create a new document.

From the main WP menu, use the space bar to position the acceptance block down to "Create New Document". Touch EXECUTE. Fill in the document summary information (ie. Document Name, Operator, Author, and Comments. Notice the type of statistics kept by the system automatically. Touch EXECUTE to finish the Document Summary Screen. MAKE A NOTE OF YOUR DOCUMENT ID NUMBER!!!

2. Notice the status line.

The status line is always displayed on the top line of your screen. It contains important information: the document id number, the page number, the line number, and the position of the cursor in that line.

3. Notice the format line.

The format line contains all the information pertinent to the format of the document (ie. spacing, tab positions, and line length.

4. Edit the format line using single spacing, tab stops at positions 5, 10, and 30, and a right margin at column 65.

Touch the FORMAT key. Watch the cursor position itself in the format line. Touch RETURN to wipe out the current format line. Use the space bar to move the cursor across the format line watching the Position field in the status line. When you are located in position 5, touch the TAB key to set a tab there. Proceed in the same manner setting tabs at positions 10 and 30. Continue using the space bar to move the return graphic to position 65. Touch EXECUTE to accept this format line.

5. Use of TAB and RETURN

Touch the TAB key. Notice the triangle pointing right graphic appears on the screen in the first tab position. Begin typing some text. Notice you don't have to hit RETURN at the end of a line: this feature is called word wrap-around. At the end of a paragraph touch the RETURN key. This ends your paragraph and positions the cursor at the beginning of the next line. Touch the RETURN key again to give you added space between paragraphs. Touch the TAB key twice. Notice two tab graphics on the screen and your cursor is in the

second tab position. Type some text and touch RETURN to end the paragraph.

6. Use of INDENT

Touch the INDENT key. Notice the right arrow graphic. Type some text. Notice that the text lines up under the indent mark. (This differs from TAB by indenting the whole paragraph and not just the first line). Terminate the indent and the paragraph by touching RETURN.

7. Use of CENTER

Touch the CENTER key. Notice the diamond graphic. Type your name and watch how the WP automatically centers it on the line.

8. Use of PAGE

Touch the page key. You should have a blank screen in front of you with a format line at the top. Use the PREVIOUS SCREEN key to see the page graphic at the bottom of the preceeding page. Touch NEXT SCREEN to get back to your place in the document. Pages should be used to break up your document.

9. Use of FORMAT again

To revise this format line touch SHIFT FORMAT. Set tabs at positions 15, and 30 and the line length at 50. Touch EXECUTE to accept the format line.

10. Use of DEC TAB

Touch the DEC TAB key. Notice the graphic lines up with the first tab position. Type a number containing a decimal place. Notice that the decimal lines up with the tab position. Type several more rows and columns of numbers with decimal points noticing how they line up. Touch RETURN twice.

11. Use of FORMAT again NO

Touch FORMAT. This brings up the previous format. Touch FORMAT again. This brings up the original format. Touch EXECUTE to accept this format.

12. Use of NOTE NO

Touch the NOTE key. Notice the double exclamation point graphic. Note is used as a reminder in the document on the screen only. At printout, any text in between the note mark and the return will not print. Touch RETURN.

13. Use of STOP NO

Touch the STOP key. Notice the square graphic. STOP is used to stop the

printer at a point in the text (for example to change the printwheel to the scientific wheel for equations). Every occurance of a STOP code halts the printer so you need another stop code to change from scientific back to a regular wheel.

Type a short pararaph.

14. Use of DELETE

ALSO SHIFT DELETE

Since we don't need notes or stop codes in our document, we will delete that text. Use the cursor control keys to position the cursor under the note graphic. Touch DELETE. In the top right corner of the screen the prompt will read "Delete What?". Use the cursor control keys or the space bar or any letter or the return key to highlight the area to be deleted. Touch EXECUTE to perform the actual deletion.

15. Use of INSERT

ALSO SHIFT INSERT

Type your first name and your last name. Use the cursor control keys to position the cursor under the first letter of your last name. Touch INSERT and see the prompt "Insert What?". Type your middle name and touch EXECUTE to perform the insertion. You can insert any amount of text.

16. Use of Copy

Use your previous screen and cursor control keys to position the cursor at the beginning of a paragraph somewhere in your document. Touch the COPY key and see the prompt "Copy What?". Use the cursor control keys to highlight the area to be copied and touch EXECUTE. The prompt now reads "To Where?". Use the Next Screen and cursor control keys to position the cursor at the end of the document and touch EXECUTE. The highlighted paragraph will be copied to the end of the document.

17. Use of MOVE

MOVE is executed in exactly the same manner as COPY. Position the cursor to a paragraph you want to move. Touch the MOVE key. Highlight the text you want moved and EXECUTE. Position the cursor to the place you want the text moved to and touch EXECUTE.

18. Use of GO TO PAGE

GO TO PAGE can be used to position the cursor on any page of the document. Touch the GO TO PAGE key. In response to the prompt "Which Page?", type 1 and EXECUTE. Touch GO TO PAGE and respond 99 to get to the end of the document.

19. Use of Subscript

Superscript and Subscript allow printing 1/4 of a space above or below the line without changing formats to Quarter spacing. You cannot see it on the screen, but you will at printout. Type "Hydrogen and oxygen were playing a baseball game. The score was tied: Hydrogen had one point and Oxygen had one point. Then Hydrogen got a home run and the score was H_2O_1 and the game was called because of rain." At printout you will see the subscripts.

20. Use of UNDERSCORE

Touch the COMMAND key. In response to the prompt "Which Command?" type shift Underscore. Begin typing text and notice how everything is automatically underscored. To exit from auto underscore touch the CANCEL key.

21. Use of SEARCH

Touch the SEARCH key. In response to the prompt "Search For What?" type a word in one of your paragraphs. What you type appears on the bottom of the screen as the system searches for your word. If you make a mistake just backspace and type over again. If you touch SEARCH or EXECUTE again it will find the next occurance, etc.

22. Use of REPLACE

Position the cursor under the first letter of a word common to your document. Touch the REPLACE key. In response to the prompt "Replace What?" highlight the word and touch EXECUTE. In response to the prompt "Replace it with?", type something different and touch EXECUTE.

23. Use of GLOBAL REPLACE

Touch Shift Replace. Answer the prompts as in the REPLACE function. When it says"Find Next One?" you have two options: touching EXECUTE will search and replace one at a time; touching Shift Replace again will automatically replace all occurances of your highlighted word throughout the document.

24. Use of global hyphenation

Release II

Position to the top of a page. Touch the COMMAND key and then the hyphen key. In response to "Zone Length?" answer 3 EXECUTE. Every time there are more than 3 spaces at the end of a line, you will have the opportunity to hyphenate the word. Touch SEARCH to find the next word to hyphenate.

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2200/WP EXERCISE

PLEASE MAKE INDICATED CORRECTIONS TO THE MEMO ARCHIVED AS 0001z AND 0002z.

This may involve creating a new library or changing of document names before retrieving from the archive diskette.

Replace WP with Word Processing throughout document

2. Tabs at 5, 10, 25, 70, 5
3. Right justify all copy
4. Footer on page #2

To: WP Sales Reps.

From: WP Marketing Department

Subject: Full Page versus Partial Page CRT

Back a few years ago, when the WPS product line was first introduced, we discussed what we thought would be the most often brought up objection to our system - namely, the absence of a full-page screen.

not under- are this

Sure enough, our competitors really hit hard on that point and, in some cases, we lost several orders because of it.

sp

Thanks to some dedicated field people who brought several articles to our attention, we can back up what we've known all along. A full page CRT screen is not necessary to have an effective and efficient WP system. In fact, this article points out the fact that a partial page display makes a system even more effective and efficient.

Special attention should be made to several points contained in the article.

1. Optimum screen usage depends on the type of work being done. Where highly efficient data (text) manipulation is required, the ability to "roll" and "scroll" through many more lines of text than appear at one time on the CRT is particularly useful.

2. Customers Generally tend to believe that a full page screen speeds long-document throughput. However, WP users may be making unnecessary sacrifices by clinging to the notion that more is better than less.

3. Customer's desire for a full-page screen is the result of their earlier page orientation, promulgated by those companies selling finished pages, such as IBM (card-to-page relations), LEXITRON and VYDEC. However, this indicates a lack of practical experience with more advanced editing systems; a general misunderstanding of the newer systems; a general misunderstanding of the newer equipment; and ignorance of the speed at which text can be manipulated with the new technology.

switch the order

4. About a full-page screen, "Although this appears to be an advantage because final copy can be seen before printing, this capability is really only necessary for letters."

5. In reviewing how VYDEC re-page balances after a revision;"Pagination of a long, edited document is cumbersome." It takes thirteen (13) separate functions for each page.

add page numbers →

97

6. In discussing a system's potential growth and expandiblity; " I micro-processor-based intelligent terminals are really small computers, why not take advantage of the computer's ability to expand and grow as one's needs and requirements dictace? To get all this, if you must do with less then wouldn't you agree you're getting more?

have a double accent and remove it.

As is quite evident, this article supports the use of partial page screens. Point this out to all of your prospects/suspects when selling the benefits of a WP system.

remove

Good luck and good selling!!!

Please add the following:

Important Statistics

34.00	56.90	467.09	23.90
.08	4.1	6.82	1.903

To: Word Processing Sales Reps.

From: Word Processing Marketing Department

Subject: Full Page versus Partial Page CRT

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Sure enough, our competitors really hit hard on that point and, in some cases, we lost several orders because of it.

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99

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DOCUMENT FILING

Document filing is run from the main 2200/WP menu. Its functions include file to archive, copy to archive, retrieve from archive, delete from library, delete from archive, and prepare new archive.

Upon entering Document filing, the user is prompted for archive location. The locations should have been assigned previous to this point. The operator enters the location letter and proceeds with operations.

Before filing to archive, the archive must be prepared. Prepare new archive will ask the user for creation library. This letter is used in the archive label generated by the system, and is user's choice. Consistency with either library identifiers or the location letter is most common. The user is then prompted to mount archive. If the archive location is a hard disk it is already mounted, hit EXECUTE. Otherwise, the user must insert a diskette into the proper drive.

NOTE: All diskettes being newly used must be formatted.

2270A (white-labeled, single-sided-single-density) diskettes are formatted by inserting a diskette into the leftmost drive and pressing the format button above the drive. A steady red light should appear. When the light is terminated the diskette is formatted and ready for use. A blinking red light indicates a bad diskette and should not be used after three attempts to format it.

Dual-sided-double-density (Red label,DSDD) diskettes must be formatted and scratched. These diskettes are used only on the LVP and SVP diskette drives, and are always specified as 2200 system archives. The following statements are necessary for this operation. These statements should not be issued without proper supervision by the system's manager.

```
$FORMAT DISK T/XXX,
SCRATCH DISK T/XXX, END = 3873
(XXX=Disk device address)
```

Once a diskette has been mounted, an archive label is assigned by the system, and the archive is prepared. The archive label should be remembered for filing at a later date. Documents may be filed to archive until the archive becomes full, at which time a new archive must be prepared.

For any filing operations, the operator will be asked for single or range option filing, the location of the archive, the archive label (for 2200 system archives only), and the Document I.D.(s) to be filed. Further information is available in the Operator's Guide.

HARDWARE INFORMATION

Date: July 15, 1981

Subject: Terminal Controller Upgrade Required for 2236DW Terminal

Some users are discovering extra special function keys on their 2236DW terminals. This is not a supported feature, but rather an installation error caused by failing to update the firmware in the terminal controller when the 2236DW terminal was added to a 2200MVP or 2200LVP system that was manufactured before March 1981.

The firmware in the 2236MXD should be updated to revision 7 as per ECO #18475. (part numbers 378-2140 R07, 378-2141 R07, 378-2142 R07, 378-2143 R07)

The firmware in the 22C32 controller should be updated to revision 1 as per ECO #18474. (Part numbers 378-2591 R01, 378-2449 R01, 378-2450 R01, 378-2451 R01)

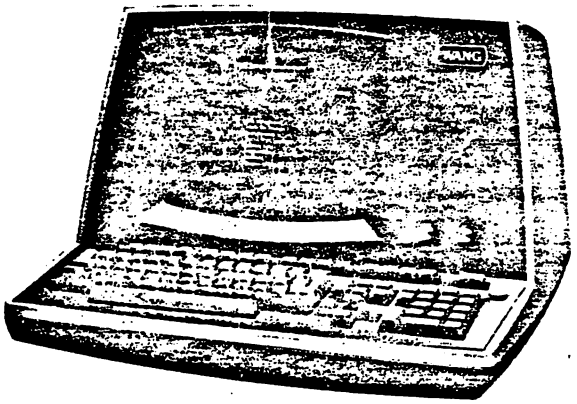
The firmware in the SVP terminal controller should be updated to revision 1 as per ECO #18473. (Part numbers 378-4092 R01, 378-4093 R01) Controllers manufactured after the introduction of the 2236DW terminal should contain the correct firmware.

The addition of more special function keys to the terminal keyboard would have severly restricted the use of the BASIC-2 DEFFN' statement for defining marked subroutines that are not to be accessed from the keyboard. The correct firmware in the terminal controller prevents the insert, delete, next screen, previous screen and cursor keys from accessing marked subroutines. The correct firmware permits the insert, delete, and cursor keys to be used within the field editor (INPUT, LINPUT, program entry).

2200VP and 2200SVP users may find that the same extra special function key symptom exists when using a 2236DW terminal. Release 2.4 of the VP (single user) operating system contains changes similar to those made in the terminal controller firmware -- the cursor keys do not invoke DEFFN' marked subroutines and the cursor keys may be used to position the cursor within INPUT and LINPUT statements.

PRODUCT BULLETIN NO.190

MODEL 2236DW INTEGRATED TERMINAL PRODUCT BULLETIN



INTRODUCTION

Wang Laboratories, Inc., is pleased to announce the addition of a new terminal for the 2200 family of computer systems -- the Model 2236DW Integrated Terminal. This new microprocessor-controlled terminal offers our customers the many sophisticated features of the 2236DE terminal with a keyboard layout capable of supporting Wang 2200/WP Word Processing Software. These features include:

- Word Processing Style Cursor Control and Function Keys supporting Integrated Word Processing and Data Processing Functions
- Repeating Keys and Underlined Characters
- Character Display Attributes (bright, blinking, underlining, and reverse video)
- Graphics Character Set
- Box Graphics
- Interface to a Terminal Printer for Local Print Output
- Self-test Diagnostics
- Quiet Operation

Terminal features, such as character display attributes, character graphics, and box graphics, can be implemented with a minimum of programming effort with the 2200 operating systems.

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13-7023

WORD PROCESSING SOFTWARE

With the addition of the 2236DW Integrated Terminal to the 2200 Series Product Line, users may now perform word processing and data processing applications at the same terminal. The 2200/WP Word Processing Software System allows the user to execute word processing functions quickly and efficiently. The software is document oriented, thereby allowing complete documents rather than individual pages to be created, edited, or printed.

The 2200/WP Word Processing Software includes features such as operator prompts and automatic word wraparound. Other operational features include automatic indexing for superscripts and subscripts; automatic centering, indenting, and decimal alignment; global search and replace; text movement; text copy; and right-margin justification.

Among the powerful editing capabilities are the insertion and deletion of characters, words, lines, paragraphs, or entire sections of text. Another special feature is Glossary, which allows the operator to record commonly used words, phrases, or standard paragraphs, that may be recalled and displayed on the screen with only two keystrokes.

TERMINAL KEYBOARD

The terminal is designed for users who are already familiar with a standard typewriter keyboard and numeric keypad. The keyboard, illustrated in Figure 1, is the operator's means of interactively communicating with and controlling the system. By using the keyboard, an operator can enter data, write programs, perform calculations, and enter commands to the processor.

The keyboard supports both uppercase and lowercase characters. Control functions are handled by several types of function keys. The keyboard has two modes of operation, selected by a toggle switch labeled A/A and A/a. The dual mode keyboard is designed for both data processing and word processing applications.

In Programmer's mode (A/A), uppercase alphabetic characters are produced, whether the keyboard is shifted or unshifted. Shifted numeric keys produce symbols and special characters. In Operator's mode (A/a), the keyboard functions as a standard typewriter, producing uppercase and special characters when shifted, and producing lowercase and numeric characters in unshifted operation.

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. The 2236DW also includes a Caps Lock feature. In either A/A or A/a mode, Caps Lock, activated by pressing the Lock key, produces uppercase alphabetic characters; all other characters, such as the numeric keys, are lowercase. (Refer to Table 1 for a detailed listing of the performance of the keys in each different operating mode.)

The keys are well designed and are ideally suited for high-speed typing or data entry. Positive response keys provide adjustable audio feedback when they are touched with sufficient pressure to ensure entry of a character. An experienced typist need not "bottom out" a key to ensure entry, thereby increasing input speed and lessening the need to verify entry by checking the CRT. A program-controlled audio alarm with adjustable volume can also be used to minimize operator monitoring by signaling when special conditions occur.

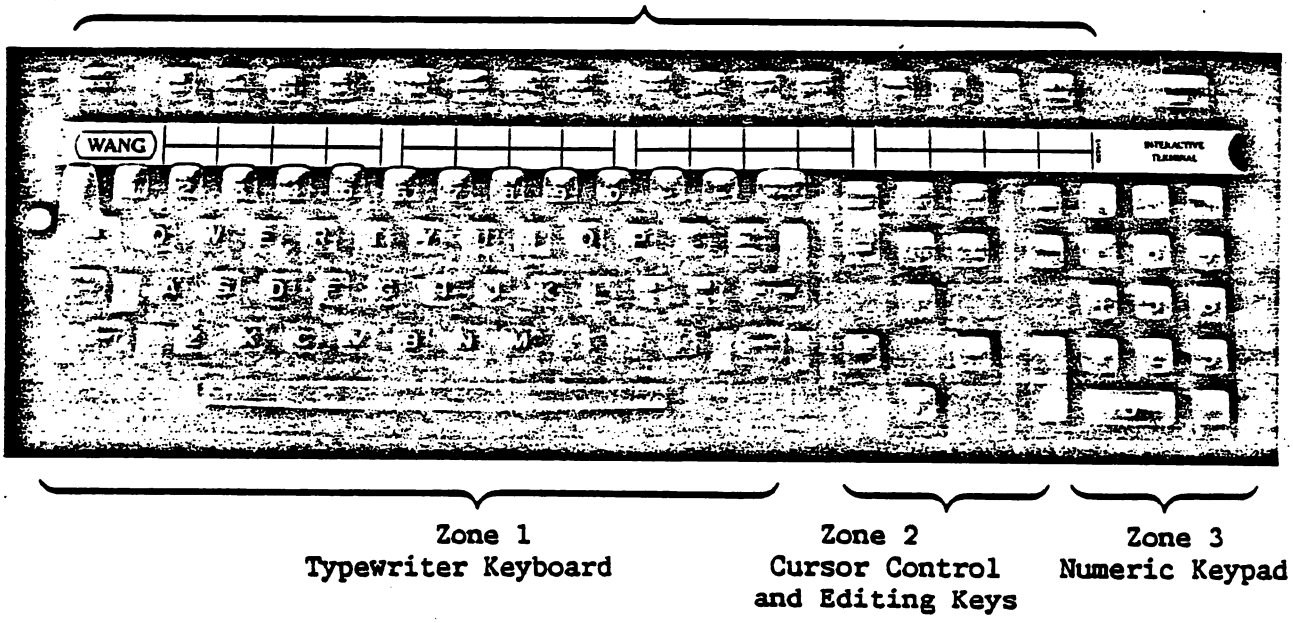

Figure 1. The Model 2236DW Keyboard

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The keyboard allows characters to be underlined. On non-English versions of the keyboard, characters can also be accented. All keys on the keyboard will repeat if held down. The microprocessor in the terminal automatically adjusts the repeat key rate according to the rate at which characters are being echoed to the CRT. The keyboard clicker sounds each time the repeated character is transmitted. Thus, both aural and visual evidence of the repeated character are given to the user. (The repeating key is particularly useful for moving the cursor when editing.)

Special features of the Model 2236DW keyboard include the following.

- Keyboard Clicker — The clicker provides audio feedback when a key is sufficiently pressed. The volume of the keyboard clicker may be adjusted.

- N-key Rollover — This feature permits a new key to be pressed and output to the terminal while a previous key is still being held down. This process can continue for any number of keys; each new key pressed takes precedence over any keys already held down. The N-key rollover feature helps eliminate errors during high-speed typing.

- Terminal Alarm — The alarm provides audio feedback to indicate the occurrence of errors or special conditions, e.g., pressing an undefined Special Function key, typing beyond a specified field, displaying an error message. The volume of this audio alarm may also be adjusted.

The RESET key, located in the upper-left corner of the keyboard, immediately stops program execution, listing, and I/O operations; clears the CRT; homes the cursor; signals ready; and returns to the console user (Console Input mode). RESET is also used during Master Initialization and hardware diagnostic operations. The RESET key is an undesirable means of terminating execution and generally should not be used to end program execution; HALT should be used for this purpose. As a protective feature, RESET and HALT are active only in Programmer's mode (A/A), and only if pressed in conjunction with the SHIFT key.

NOTE

On a 2200MVP or LVP, RESET affects only the partition to which the terminal is currently attached (the terminal's foreground partition). No other partitions are affected by RESET.

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Table 1. Operation of Keyboard Modes

	A/A mode	A/a mode
Unshifted Operation	Alpha Keys -- Uppercase Punctuation -- Lowercase Numerics -- Lowercase (numbers) Special Function -- '0 to '15 CONTINUE -- Active HALT -- Inactive RESET -- Inactive ERASE -- From cursor position LOAD RUN key -- RUN	Alpha Keys -- Lowercase Punctuation -- Lowercase Numerics -- Lowercase (numbers) Special Function -- '0 to '15 CONTINUE -- Active HALT -- Inactive RESET -- Inactive ERASE -- From cursor position LOAD RUN key -- RUN
Caps Lock Operation	Alpha Keys -- Uppercase Punctuation -- Lowercase Numerics -- Lowercase (numbers) Special Function -- '0 to '15 CONTINUE -- Active HALT -- Inactive RESET -- Inactive ERASE -- From cursor position LOAD RUN key -- RUN	Alpha Keys -- Uppercase Punctuation -- Lowercase Numerics -- Lowercase (numbers) Special Function -- '0 to '15 CONTINUE -- Active HALT -- Inactive RESET -- Inactive ERASE -- From cursor position LOAD RUN key -- RUN
Shifted Operation	Alpha Keys -- Uppercase Punctuation -- Uppercase Numerics -- Uppercase (symbols) Special Function -- '16 to '31 CONTINUE -- Inactive HALT -- Active RESET -- Active ERASE -- Line Erase LOAD RUN key -- LOAD	Alpha Keys -- Uppercase Punctuation -- Uppercase Numerics -- Uppercase (symbols) Special Function -- '16 to '31 CONTINUE -- Inactive HALT -- Inactive RESET -- Inactive ERASE -- Line Erase LOAD RUN key -- LOAD

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For convenience of discussion, the keyboard has been divided into the following four physical zones. Refer to Figure 1.

Zone 1 - Typewriter Keyboard -- Similar to a standard typewriter, this zone contains the alphanumeric characters; special characters (e.g., #, $, %); the numeric operators (+, *, /, -, ↑); and the TAB, GL, RETURN, and SHIFT keys. The GL key provides Special Function '124 when unshifted and '125 when shifted; the TAB key provides Special Function '126 when unshifted and '127 when shifted (refer to the description of Zone 4).

Zone 2 - Cursor Control and Editing Keys -- This zone contains Editing keys (INSERT and DELETE), Location keys (NEXT SCRN and PREV SCRN), and Cursor Control keys (controls movement of cursor in indicated direction -- up, down, right, and left).

Zone 3 - Numeric Keypad -- The numeric zone is designed like a standard 10-key numeric pad for rapid entry of numeric characters. The numeric keys are grouped here for convenience. Digits may be entered by using the numeric keys in either the numeric or the alphanumeric zone. This zone also includes such keys as ERASE, HALT/CONT, and RETRN.

Zone 4 - Word Processing/Special Function Keys -- Across the top of the keyboard are 16 Word Processing/Special Function keys. When using the word processing software, the Word Processing Function keys simplify document creation and revision. For example, the CENTER key automatically centers a line of text, the MOVE key allows any amount of text to be moved within a document, and the REPLC key allows a character-defined sequence to be replaced with another within a document.

The Word Processing keys also serve as Special Function keys that can be set up by the programmer to perform program-defined functions. Since each of these keys may be pressed in conjunction with the SHIFT key, a total of 32 Special Function keys is available. The keys are numbered '0 -- '15 (lowercase) and '16 -- '31 (uppercase). Simultaneously pressing a key numbered '0 -- '15 with SHIFT accesses a key from '16 -- '31. The function key number is labeled on the front surface of each key. Additionally, the TAB key and the GL key in Zone 1 can be used as Special Function keys.

Special Function keys may be used to perform a variety of tasks, e.g., start program execution, access subroutines, or enter a predefined text string. The operator is informed of the meanings of the Special Function keys either by screen prompts or by means of the label strip located immediately below this row of keys. In order to perform a given task, a Special Function key must be defined by the user with a DEFFN' statement in the currently loaded program. The Special Function keys are also used during Master Initialization to load the BASIC-2 interpreter and operating system.

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CRT DISPLAY

The 2236DW Integrated Terminal contains a 12-inch (30.5 centimeter) diagonal measure Cathode Ray Tube (CRT) screen display. The CRT displays a full 128-character set, including uppercase and lowercase keyboard characters, some foreign language characters, special symbols, and underlining. The CRT also displays an alternate character set of graphic characters and box graphics. All characters may be displayed using one or more of several character display attributes.

The CRT has a 24-line, 80 characters-per-line capacity (1,920 character positions) for full-screen operator prompting and verification of keyed characters. Brightness and contrast controls provide a sharp, clear image on the screen. Display speed is approximately 2,000 characters per second at 19,200 baud. A cursor, resembling an underscore, indicates the location on the display where the next character will appear. In addition to controlling cursor movement and positioning from the keyboard, a number of codes can be used to manipulate the cursor under program control for specially formatted displays.

TERMINAL/CPU INTERFACE

Each 2236DW Integrated Terminal is connected to either a 2236MXD Terminal Processor or a 22C32 Triple Controller when configured with a 2200MVP, LVP, or VP Central Processing Unit. (Existing controllers must be revised to current standards to support the 2236DW terminal.) These devices handle I/O operations between the CPU and the terminals, and buffer data entered from or transferred to the terminals.

The 2236MXD Terminal Processor is used on the 2200MVP CPU, which can support 12 terminals (4 per terminal processor). The Model 2236MXD is also used on the 2200LVP, which can support 4 terminals. Since 2200/WP Word Processing Software requires 28K of user memory per terminal, the maximum number of terminals that can simultaneously operate WP varies with available user memory. The 22C32 Triple Controller supports a single terminal and can be used on the 2200VP, MVP, and LVP CPU. The 2236DW plugs directly into the terminal connector on back of the SVP CPU; no additional controllers are necessary.

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Model 2236DW terminals can be attached locally to the 2200MVP or LVP CPU at distances up to 2000 feet (606.1 meters), or remotely via modems and telephone lines. Terminals connected to a 2200SVP or VP CPU can be attached locally at a maximum distance of 50 feet (15.2 meters) and 2000 feet (606.1 meters) respectively. Communication between the terminal and the CPU is asynchronous and full-duplex, with selectable line speeds ranging from 300 to 19,200 bits per second (bps). To accelerate communications between the terminals and the CPU, the system performs automatic data compression on information transmitted to each terminal.

Each 2236DW can support its own terminal printer which can be used for program output. Additionally, hard copy of CRT displays can be created at each terminal site. A dump of the display screen to the terminal printer may be initiated from the keyboard, resulting in the printing of all standard characters present on the screen. The screen dump feature requires no special software and can be performed at any time.

The 2236DW and its controller employ microprocessors to optimize data throughput. For example, strings of four or more identical characters are compressed for transmission into 3-byte blocks. A ready/busy protocol controls information flow between the terminals and the terminal processor. Thus, it is unnecessary for the attached printer to keep up with the serial communication line data rate. These features are automatic and are completely transparent to the software executing in the 2200 CPU.

As an added feature, the 2236DW performs self-testing diagnostics every time it is turned on. These diagnostics ensure optimal terminal condition before use. If the unit fails one of the tests, a continuous alarm sounds, alerting the user to the failure. The tests allow a Wang Customer Service Representative to quickly identify the problem and minimize downtime.

The 2236DW terminal also incorporates a power supply that relies on air convection cooling, rather than a fan. This feature provides quiet terminal operation.

Any standard Wang printer or plotter with a 36-pin cable connection may be plugged into the printer connector on the 2236DW Integrated Terminal. A Wang-supplied direct-connection cable or an optional modem cable plugs into a RS-232-C-compatible connector on the terminal.

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THE SCREEN DUMP

The screen dump feature allows the user to obtain a hard copy record of the CRT on a printer attached to the terminal. Screen dump is a temporary off-line terminal operation which may be initiated only by the terminal operator. In fact, a BASIC-2 program can neither initiate nor detect the activation of a screen dump. Therefore, the screen dump may be used to preserve hard copy records of the screen even after the program has stopped with an error or after a CPU failure. However, this also means it is the terminal operator's responsibility not to activate screen dump while the terminal printer is in use. If screen dump is activated while a program is using the printer, the screen dump output will be inserted on its own separate page, and printing will then resume without missing any characters. To activate a screen dump, use the following procedure.

1. Press the EDIT key and hold it down for approximately two seconds. An immediate click will be heard. The CRT image will be frozen with the image to be dumped.

2. When a second click is sounded, the screen dump has been activated. (If the EDIT key is released before the second click is heard, the key is treated as the EDIT key and the screen image is unfrozen.)

3. The screen image is transmitted to the printer, preceded by a carriage return and form feed, which neatly formats the output. (If a screen dump is activated while a program is using the printer, the screen dump output will be inserted on its own separate page.)

4. The screen dump ends with another form feed.

5. Normal processing of output from the CPU is resumed. (No data is lost, even if the CPU has attempted output to the CRT or printer while the screen dump was in progress.)

During a screen dump, the keyboard remains active. Pressing any key will terminate the screen dump and restore normal processing. If the screen dump fails, make sure the printer is selected and try again. If the screen dump still fails, use the CLEAR button found on many printers. Do not use the terminal's RESET, because it will clear the screen.

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It is not possible for a screen dump to produce an exact image of the screen because the terminal microprocessor cannot tell what sort of printer is attached to the terminal. A conservative subset of the CRT character set is therefore employed during a screen dump. The USA version of the Model 2236DW can screen dump all characters between HEX(20) and HEX(7E), including all uppercase and lowercase characters on the keyboard. Underlined characters are translated to their nonunderlined equivalents. The actual character set used for screen dump varies among the international versions of the terminal. However, the following general rules do apply.

1. Any character not in the screen dump character set is translated to the number symbol (#).

2. Display attributes are ignored. All characters are printed in the same font and pitch.

3. Character set graphics are also translated to the number symbol (#).

4. Box graphics are ignored.

CAUTION

Since normal printing is interrupted when a screen dump is requested, the screen dump will be inserted into a report already printing. Although screen dumps eject a page before and after a dump, the user's report may be temporarily halted in the middle of the page. For some reports, this may be acceptable, but for preprinted forms such as invoices or customer statements, a screen dump which interrupts current printing could present problems.

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NOTE

The remainder of this product bulletin primarily deals with programming considerations for obtaining character display attributes, character graphics, and box graphics. The 2200/WP Word Processing Software System and other application software require no special programming knowledge. These software applications will already have implemented many features of the 2236DW terminal.

CHARACTER DISPLAY ATTRIBUTES

In order to highlight information on the screen, the Model 2236DW provides several display attributes that can be selected for any character displayed on the screen. The available display attributes are the following.

- Bright -- Characters are displayed in high intensity.
- Blink -- Characters blink.
- Reverse Video -- The character itself is dark while the character background display is light (dark on light).
- Underline -- Characters are displayed with an underscore.

HEX Codes Used to Invoke Display Attributes

Immediately after power is turned on, the Model 2236DW displays characters in normal intensity, non-blinking, normal video (light on dark), and non-underlined (this attribute shall henceforth be referred to as simply "normal intensity"). The power-on default meaning of HEX(0E) is bright, non-blinking, normal video, and non-underlined.

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The display attribute to be used is selected by sending a command of the following form to the CRT.

HEX(02 04 xx yy 0E)

or

HEX(02 04 xx yy 0F)

where:

02 04 = The control code sequence which indicates to the terminal that special character display attributes are to be selected.

xx yy = The HEX codes specifying the display attributes to be selected, where:

xx = 00 for normal intensity, no blink
02 for bright, no blink
04 for normal intensity, blinking
0B for bright, blinking

yy = 00 for normal video, no underline
02 for reverse video
04 for underline
0B for reverse video, underline

0E or 0F = A terminator character which causes the display attributes selected by xx yy to be turned on or off; HEX(0E) turns the selected attributes on, HEX(0F) turns them off.

Note that there are two ways to code the attribute "blinking." However, on the Model 2236DW, blinking normal intensity and blinking high intensity characters both appear as blinking, high intensity.

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Special Uses of Alternate Display Attributes

1. LIST D

   The CPU sends out a HEX(0E) at the beginning of each REM% statement in the program. Thus, comment statements appear in the most recently selected alternate display attribute.

2. 100 PRINT "PROMPT";: LINPUT HEX(0E), A$: PRINT A$

   The field to be entered appears in the most recently selected alternate display attribute. When entry is terminated with a carriage return, the alternate attribute is cancelled, so the PRINT statement prints A$ in normal intensity.

3. 150 PRINT HEX(0E); "PROMPT"; HEX(0F);

   160 LINPUT A$

   This time, only the prompt appears in the most recently selected alternate attribute.

Summary of Display Attribute Rules

The following list contains the general rules for governing the use of display attributes.

1. HEX(02 04 xx yy 0E) selects and activates a display attribute. Attributes activated in this manner are turned off only by HEX(0F) or by another HEX(0204... sequence. The attribute is <u>not</u> turned off by carriage return, HEX(0D). Thus, it is possible to highlight a portion of either one or several lines.

2. HEX(02 04 xx yy 0F) selects, but does <u>not</u> activate, a display attribute. Normal intensity is activated instead.

3. An isolated HEX(0E) activates the attribute selected by the last HEX(0204... sequence for a maximum of one text line. The attribute remains in effect until the occurrence of either an automatic carriage return, a programmed HEX(0D), or a HEX(0F).

4. Rule 1 takes precedence over Rule 3. If an attribute is selected and activated by Rule 1, a subsequent HEX(0E) will <u>not</u> cause the attribute to be turned off by the next carriage return.

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5. An isolated HEX(0F) always turns off the alternate attribute and restores normal intensity.

6. Screen clear, HEX(03), clears the screen to black, but otherwise has no effect on the meaning of HEX(0E) or the attribute currently in effect. Likewise, scrolling the screen scrolls in a black line, but otherwise has no effect on attributes.

7. Programmers are reminded that reverse video spaces are white, not black. Zoned format PRINT statements, i.e., PRINT, PRINT TAB, and the third parameter of PRINT AT, use spaces to clear the screen. These statements will leave white areas on the screen when reverse video is activated.

8. Terminal power on and the RESET key cause normal intensity characters to be selected and the meaning of HEX(0E) to be defined as high intensity.

9. The system considers all codes HEX(00) to HEX(0F) to occupy no space on the output medium. Thus, attribute selection sequences do not cause the system to issue automatic carriage returns or throw off the column count used by TAB and zoned format PRINT statements.

10. Control codes HEX(00) to HEX(0F) do not have attributes. It is not possible to change the attribute of a character by passing the cursor through it with a PRINT AT statement.

11. The meaning of isolated HEX(0E) is maintained by the terminal, <u>not</u> the partition. If a program gives up control of the CRT with $RELEASE TERMINAL, there is a good chance that a program in another partition will change the meaning of HEX(0E) in the course of using attributes.

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SELECTION OF CHARACTER SETS

The Model 2236DW actually offers two character sets: the normal character set (refer to Figure 2) and the alternate character set (refer to Figure 3). The following sequence is used for selecting either character set.

HEX (02 02 xx 0F)

where:

02 02 = The control code sequence which indicates to the terminal that a character set will be selected.

xx = A HEX code specifying the character set to be selected.

If xx = 00 The normal character set is selected. The codes HEX(90) to HEX(FF) are underline versions of characters from HEX(10) to HEX(7F).

If xx = 02 The alternate character set is selected. The codes HEX(80) to HEX(FF) represent the graphic characters and symbols.

0F = A terminator character that signals the end of the character selection sequence.

Programmers are reminded that any character of either character set can be underlined by using the underline character attribute. Either character set may differ on foreign language versions of the terminal. All versions of the terminal are capable of producing uppercase alphabet, numbers, and most of the special characters used in BASIC programming.

In the character set selection, the following items should be noted.

1. In the alternate character set, the codes HEX(9C) to HEX(BF) are presently undefined and reserved for future expansion. Any use of these codes involves the risk of being incompatible with future use of the terminal.

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2. With the exception of the following HEX codes, the character sets of both the 2236DE and the 2236DW terminals are identical. The following HEX code values have been redefined for the normal character set of the 2236DW terminal.

HEX	2236DW Normal Character Set	2236DE Normal Character Set
5F	down arrow	left arrow
7B	up/down arrow	section symbol
80	dotted space	blank
8D	left arrow	up/down arrow
8F	page character	paragraph symbol
DF	underlined down arrow	underlined left arrow
FB	underlined up/down arrow	underlined section symbol

3. The following Hex code values have been redefined for the alternate character set of the 2236DW terminal.

HEX	2236DW Alternate Character Set	2236DE Alternate Character Set
5F	down arrow	left arrow
7B	up/down arrow	section symbol

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High-order HEX Digit

Low-order HEX Digit	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	â	Space	0	@	P	°	p	•	a̲	_	0̲	@	P	°̲	p
1	ê	!	1	A	Q	a	q	♦	e̲	!̲	1̲	A	Q	a̲	q
2	î	"	2	B	R	b	r	▶	i̲	"̲	2̲	B	R	b̲	r
3	ô	#	3	C	S	c	s	◀	o̲	#̲	3̲	C	S	c̲	s
4	û	$	4	D	T	d	t	—	u̲	$̲	4̲	D	T	d̲	t
5	ä	%	5	E	U	e	u	⌙	a̲	%̲	5̲	E	U	e̲	u
6	ë	&	6	F	V	f	v	|	e̲	&̲	6̲	F	V	f̲	v
7	ï	'	7	G	W	g	w	..	i̲	'̲	7̲	G	W	g̲	w
8	ö	(	8	H	X	h	x	'	o̲	(̲	8̲	H	X	h̲	x
9	ü	)	9	I	Y	i	y	'	u̲	)̲	9̲	I	Y	i̲	y
A	à	*	:	J	Z	j	z	^	a̲	*̲	:̲	J	Z	j̲	z
B	è	+	;	K	[	k	↧	■	e̲	+̲	;̲	K	[	k̲	↧
C	ù	,	<	L	\	l	£	!!	u̲	,̲	≤	L	\	l̲	£
D	Ä	-	=	M	]	m	é	—	A̲	-̲	=̲	M	]	m̲	é
E	Ö	.	>	N	↑	n	ç	ß	O̲	.̲	≥	N	↑	n̲	ç
F	Ü	/	?	O	↓	o	¢	⊥	U̲	/̲	?̲	O	↓	o̲	¢

Figure 2. The Normal Character Set of the 2236DW Terminal

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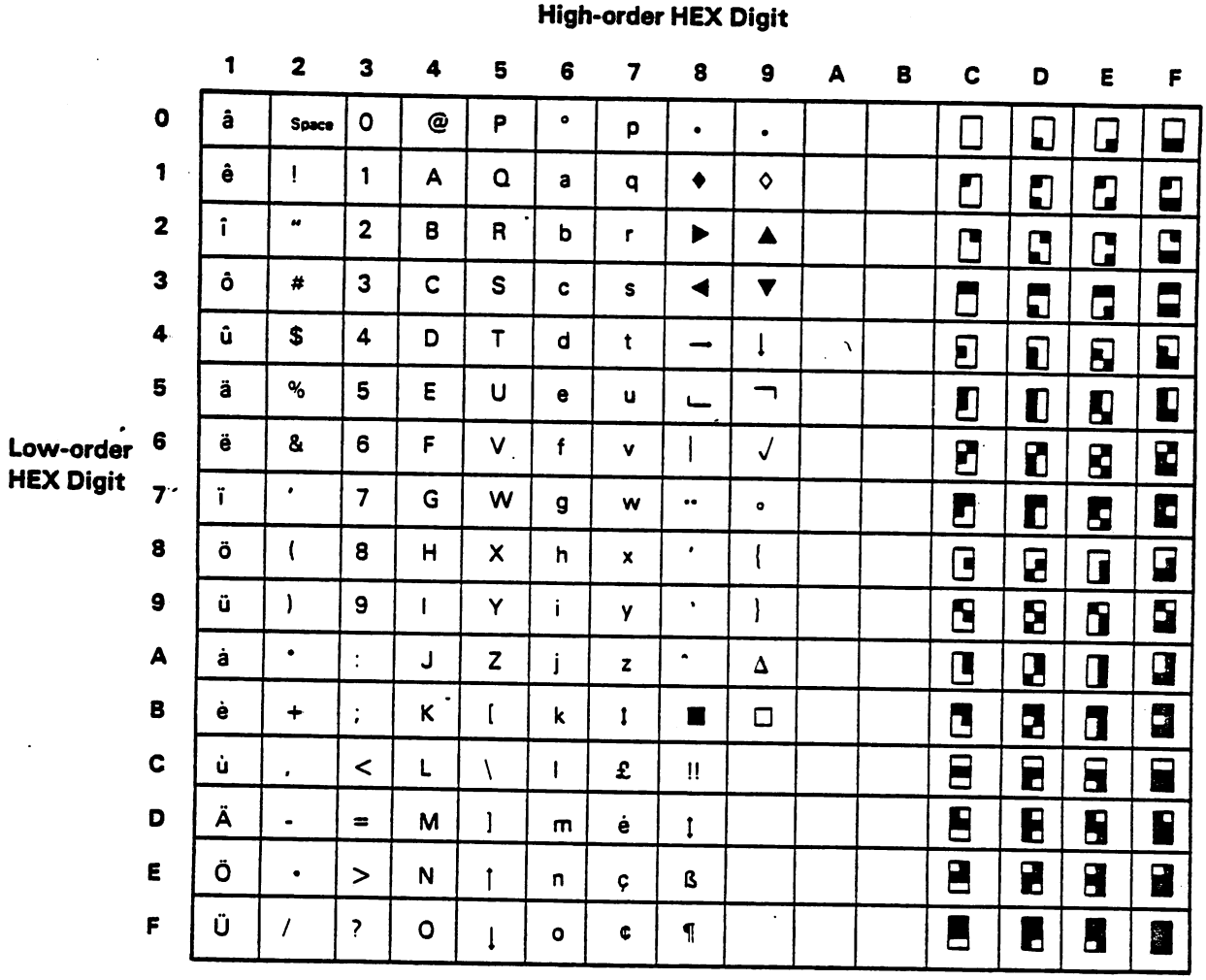

Figure 3. The Alternate Character Set of the 2236DW Terminal

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The 64 graphic characters, HEX(C0) to HEX(FF), are represented by all the combinations of sixths of a character space, where the character space is divided as shown in Figure 4. When displayed, graphic characters are extrapolated to fill the entire character position. For this reason, adjacent areas of two graphic characters will touch; thus, continuous lines (bars) of light or dark areas can be displayed on the screen. When combined with display attributes, character graphics are useful for the construction of bar graphs, histograms, and other special displays.

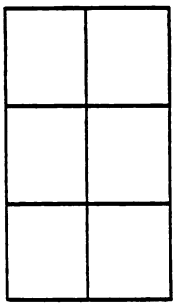

Figure 4. Division of a Character Space

The HEX codes for each specific graphic design are determined in the following manner. Use HEX(C0) as the base, with each different segment (each sixth of a character space) equal to the following HEX values.

01	02
04	08
10	20

Suppose the design was desired. To obtain the appropriate HEX value add desired segments to the base. For example:

```
   C0  ---> Base
   01 }
   02 }    Desired segments
 + 04 }

   C7  ---> Resulting HEX code for desired design
```

Therefore, the design would be coded as HEX(C7). For a quick and easy reference, programmers should also refer to Figure 3, The Alternate Character Set of the 2236DW Terminal.

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Examples of the Character Sets

```
PRINT HEX(02 02 00 0F); HEX(C6 C5 C2 D2 D5 C1 D2 D9)
```

This statement selects codes HEX(90) to HEX(FF) to represent normal characters HEX(10) to HEX(7F) with underline. Thus, the screen would display the word FEBRUARY with an underline.

```
PRINT HEX(02 02 02 0F); HEX(FF FC F0);
```

This statement selects the alternate character set and displays three character boxes of decreasing heights ( ). These are the characters most useful for constructing vertical bar graphs.

Summary of Character Set Selection

The rules concerning the use of character set selection can be summarized as follows.

1. HEX(02 02 00 0F) selects the normal character set. The meaning of codes HEX(90) to HEX(FF) are defined to be the normal characters HEX(10) to HEX(7F) with underline.

2. HEX(02 02 02 0F) selects the alternate character set. The codes HEX(80) to HEX(FF) represent the graphic characters and other special symbols.

3. Power on and RESET select the default character set (the normal character set for the standard USA Model 2236DW).

4. Carriage return does not affect character set selection. The sequences given in Rules 1 to 3 are the only methods for changing character sets.

5. As with attributes, the character set selection sequences affect the interpretation of characters at the time they are received by the terminal. Therefore, underlined and graphic characters may be used in different areas of the same display. Once on the screen, a character is modified only by explicitly striking over it with another character or by screen clear.

6. All display attributes can be used with both the normal and the alternate character set.

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PRINT BOX FUNCTION

General Form:

BOX (height, width)

where:

height = Expression specifying the height of the box; each unit is the height of a character space.

width = Expression specifying the width of the box; each unit is the width of a character space.

Purpose:

The BOX function is used within a PRINT statement to draw or erase a box or line on a CRT which has box graphics capability. The first expression specifies the height of the box; the second is the width of the box. The sign of the arguments determines whether lines are drawn or erased. If the signs are nonnegative, lines are drawn; negative signs cause lines to be erased. If the box height is zero, a horizontal line is drawn or erased. A width of zero causes a vertical line to be drawn or erased. The BOX function positions the box so that the upper-left corner is at the current cursor position. Drawing a box does not move the CRT cursor.

Examples:

PRINT BOX (3, 4);	-- Draws a 3 x 4 box
PRINT BOX (-3, -4);	-- Erases a 3 x 4 box
PRINT BOX (0, X);	-- Draws a horizontal line X units long
PRINT BOX (-7, 0);	-- Erases a vertical line 7 units long
PRINT AT (5, 10); BOX (1, 6); "TITLE"	-- Displays TITLE enclosed in a box

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Note that in order to include the field TITLE in the last example, the box had to be one character wider than the length of the field, and the left edge of the box had to be one character position to the left of the field to be enclosed. Therefore, to box a field in general, use the statement:

```
PRINT BOX (1, LEN(A$)+1); "b"; A$
```

where A$ is the given field, LEN(A$) is the length of the field A$, and the symbol b represents one space.

Box graphics can also be used for highlighting entry fields as shown in the following example.

```
CLEAR
10 PRINT "PROMPT"; BOX(1, 17);:LINPUT A$
RUN
```

Box Graphics

The 2236DW Integrated Terminal can display continuous horizontal or vertical lines, enabling forms to be drawn or information to be separated by lines or boxes. The horizontal line unit is a line segment the width of a character space, but positioned from the middle of one character space to the middle of the next character space. Horizontal lines are displayed between rows of characters.

The vertical line unit has the height of a character space. Vertical lines are drawn through the middle of a character space; the line coexists with the character at that location. (Note that since the height and width of a character space are not the same unit measurement, boxes are not drawn proportionally. However, because of these measurements, a programmer can easily box fields of characters.)

Figures 5 and 6 illustrate the placement of box graphic lines. Figure 5, which shows the smallest possible box, was produced by the statement PRINT BOX(1,1); "AB". It illustrates the placement of horizontal and vertical box graphic lines relative to the character position. Figure 6, which was produced by the statement PRINT BOX(1,1); HEX(0202020F); HEX(E1CC), demonstrates where box graphic lines appear relative to character set graphic blobs.

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The terminal allows the programmer to consider the CRT as both a box graphics display and a character display that just happen to be displayed on the same screen. While in Character mode, only the characters and their attributes are modified while box graphics remain intact. For example, within a boxed area used to highlight a prompt, the prompt may be rewritten a number of times without altering or erasing the box itself. The one exception to this rule is screen clear, HEX(03) which clears both characters and box graphics. During a box graphics sequence, characters and their attributes are undisturbed.

Because the Character and Box Graphic modes are independent, it is easy to update portions of either display. The third argument of PRINT AT is useful for clearing portions of the display. Though slower than screen clear, the statement PRINT AT (0,0,) is useful for clearing the characters from the screen without disturbing the box graphics.

Figure 5. Box Graphic Line Placement Relative to Character Position

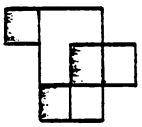

Figure 6. Box Graphic Line Placement Relative to Graphic Character Set

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Printed in U.S.A.
13-7023

MODEL 2236DW TERMINAL SPECIFICATIONS

Size

Height	13.5 in. (34.3 cm)
Depth	20.5 in. (52.1 cm)
Width	19.8 in. (50.3 cm)

Weight

41.0 lb (18.6 kg)

CRT

Display Size	12 in. diagonal (30.5 cm)
Capacity	24 lines, 80 characters/line
Character Height	0.16 in. (0.41 cm)
Character Width	0.09 in. (0.23 cm)

Character Set

128 characters, including uppercase and lowercase letters; each character is assigned one or more attributes for high- or low-intensity display, reverse video, blinking, or underlining. Additional alternate character set consisting of 64 graphic characters and other special symbols is supplied. Also capable of displaying line-segment (box) graphics, separate from either character set.

Keyboard

Typewriter keyboard which can generate 88 different ASCII characters, including uppercase and lowercase letters, numbers, and symbols. Also included are a numeric keypad, several Program Control keys, and 18 program-definable Special Function keys: 16 numbered keys along the top of the keyboard, and the TAB and GL keys located in the alphanumeric keyboard zone. Each Special Function key can be used with the SHIFT key for a total of 36 Special Function keys. The keyboard also contains Editing keys (INSERT and DELETE), Location keys (NEXT SCRN and PREV SCRN), and Cursor Control keys (controls movement of cursor in indicated direction -- up, down, right, and left).

Operating Environment

Temperature

50°F to 90°F (10°C to 32°C)

Relative Humidity

35% to 65% noncondensing (recommended)

20% to 80% noncondensing (allowable)

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Power Requirements
115 or 230 VAC ± 10%
50 or 60 Hz ± 1.0 Hz
50 Watts

Fuses
2 amp (SB) @ 115 V/60 Hz
1 amp (SB) @ 230 V/50 Hz

Communication Mode
Asynchronous, full-duplex

Transmission Rates
Manually selectable for each terminal at 300, 600, 1200, 2400, 9600, or 19.2K baud

Character Format
When communicating with a 2200MVP, LVP, SVP, or VP system:
1 start bit, 1 stop bit
8 data bits, plus odd parity (11 bits/character)
Other selectable character formats:
8 data bits, no parity
7 data bits, odd parity
7 data bits, even parity (10 bits/character)

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13-7023

Terminal/CPU Cable

One 8-ft (2.4-m) cable to power source. One 25-ft (7.6-m) direct connection cable is provided with each Model 2236DW, unless an optional direct connection cable is ordered for a terminal. Nonextendable cables are available optionally for direct connection up to 2000 ft (606.1 m). Refer to Table 2.

Table 2. Direct Connection Cables

Length in Feet	Length in Meters	Part Number
25	7.6	120-2236-25
50	15.2	120-2236-50
100	30.3	120-2236-1
200	60.6	120-2236-2
300	90.9	120-2236-3
400	121.5	120-2236-4
500	151.5	120-2236-5
600	181.8	120-2236-6
700	212.1	120-2236-7
800	242.4	120-2236-8
900	272.7	120-2236-9
1000	303.0	120-2236-10
1250	378.8	120-2236-11
1500	454.5	120-2236-12
1750	530.3	120-2236-13
2000	606.1	120-2236-14

Modem cables are available optionally in lengths of 12 ft (3.7 m), with extensions of 25 ft (7.6 m) and 50 ft (15.2 m). (Refer to Table 3) Combined cable distance however, from Wang equipment to a modem is 50 ft (15.2 m) maximum according to Electronics Industries Association (EIA) standards.

Table 3. Modem Cables

Length in Feet	Length in Meters	Part Number
12	3.7	120-2227-12
25	7.6	220-0219
50	15.2	220-0220

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13-7023

PRODUCT BULLETIN NO.190

2236DW Integrated Terminal Product Statistics

Model Number: 2236DW
Part Number: 177-3249
Release Date: February 2, 1981
Availability: March 2, 1981
Classification: Electrical
Warranty: Standard
Commission: 5%

WANG LABORATORIES, INC.
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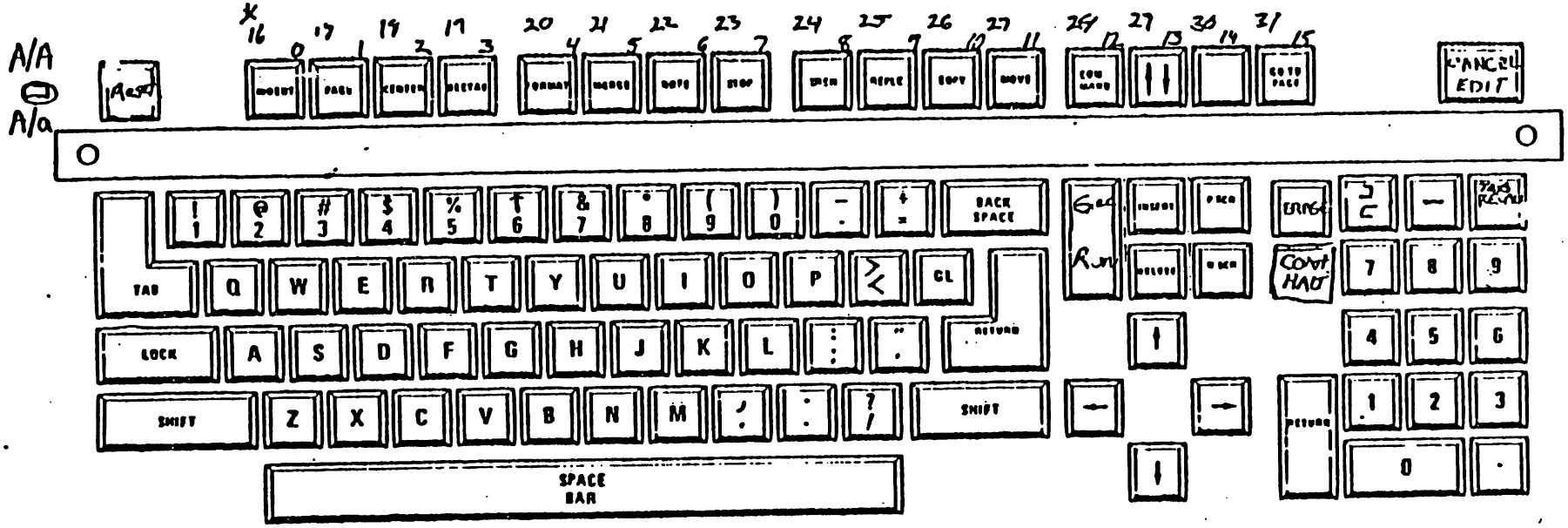
Printed in U.S.A.
13-7023

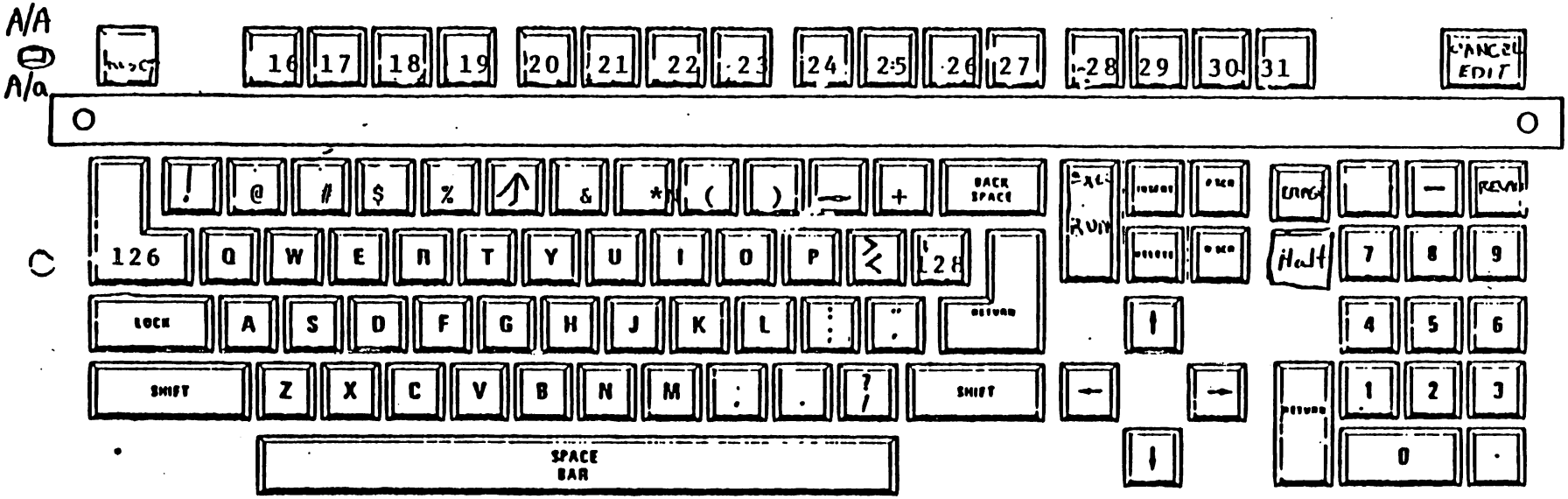
2236 DW Terminal Domestic Version

Physical Keyboard Layout



* Numbers will be on front of keys

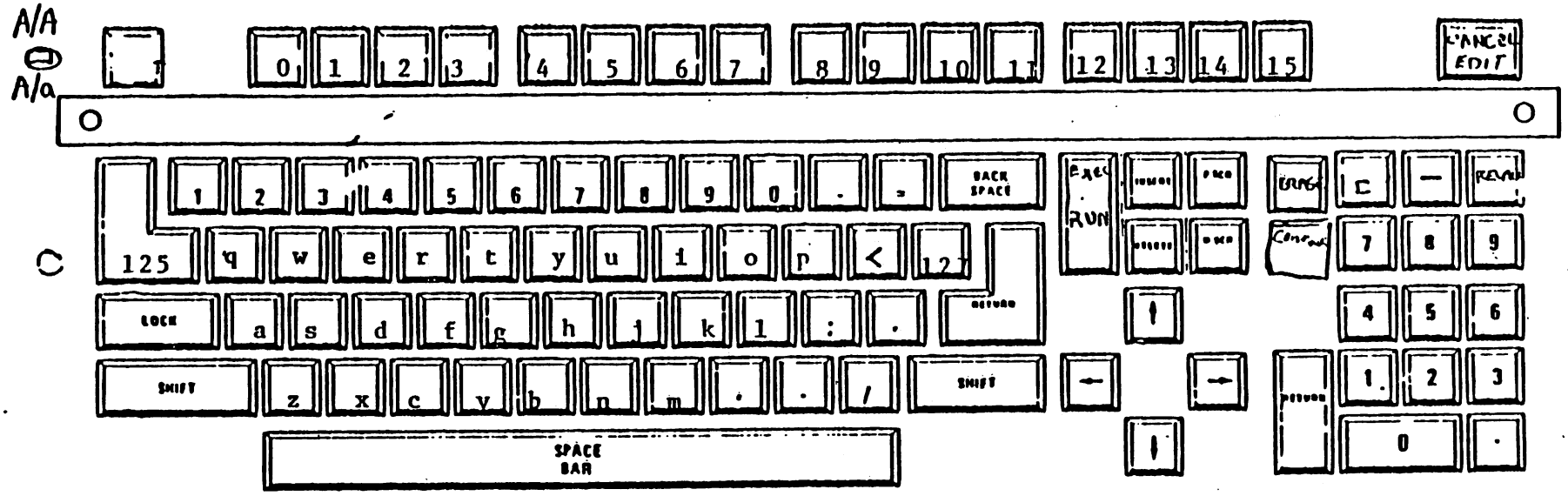
2236 DW Terminal Domestic Version



Toggle Switch: Down
Shift Lock: Either Position
Shift: Pressed

Results:
Alpha: Upper Case
Numeric 1: Symbols
Numeric 2: Numerals
S.F. Keys: 16-31
Continue: Not Active
Reset: Not Active
Halt: Not Active

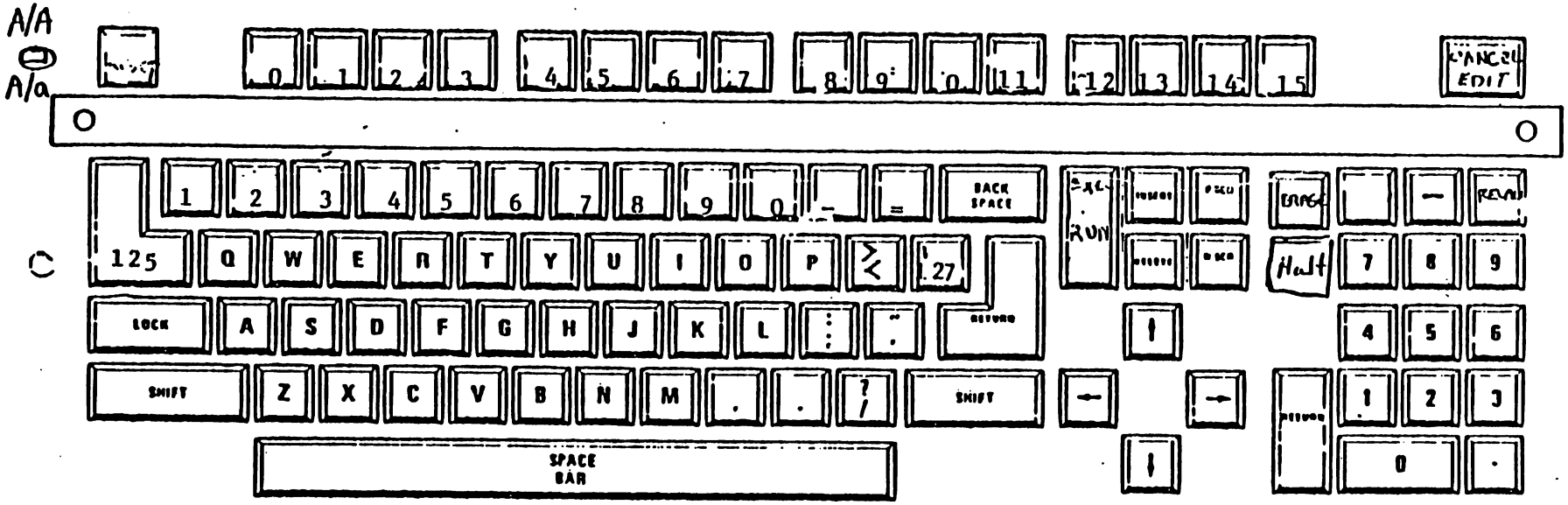
2236 DW Terminal Domestic Version



Toggle Switch: DOWN
Shift Lock: OFF
Shift: NOT PRESSED

Results:
Alpha: Lower Case
Numeric 1: Numerals
Numeric 2: Numerals
S.F. Keys: 0-15
Continue: Active
Reset: Not Active
Halt: Not Active

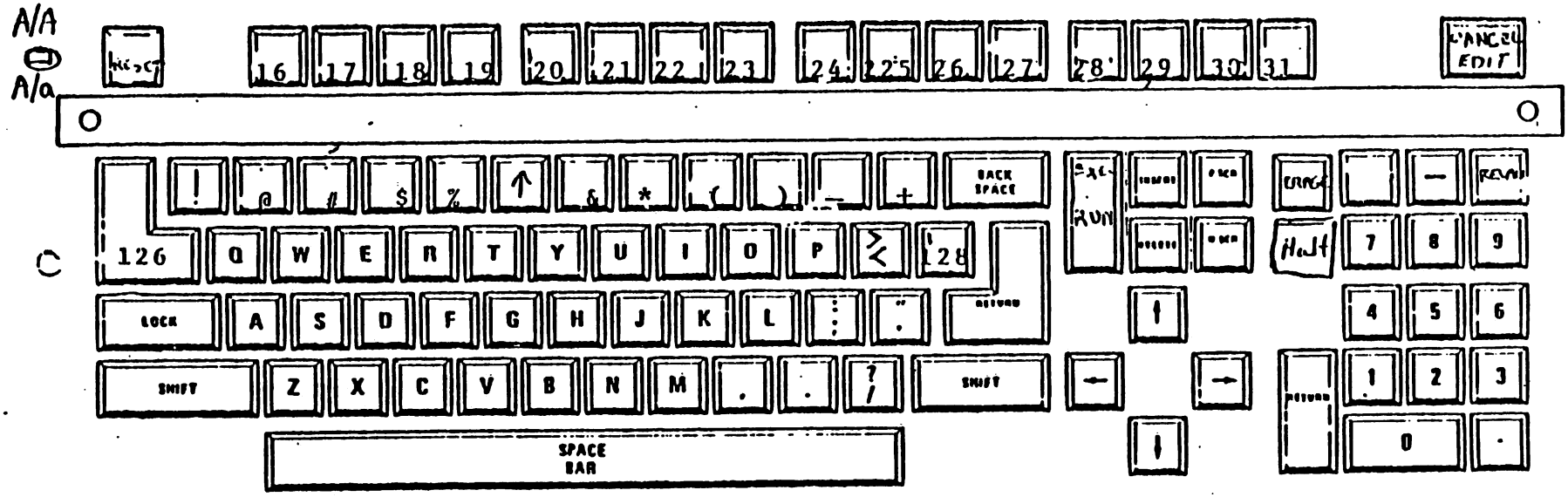
2236 DW Terminal Domestic Version



Toggle Switch: Down
Shift Lock: On
Shift: Not Pressed

Results:
Alpha: Upper Case
Numeric 1: Numerals
Numeric 2: Numerals
S.F. Keys: 0-15
Continue: Active
Reset: Not Active
Halt: Not Active

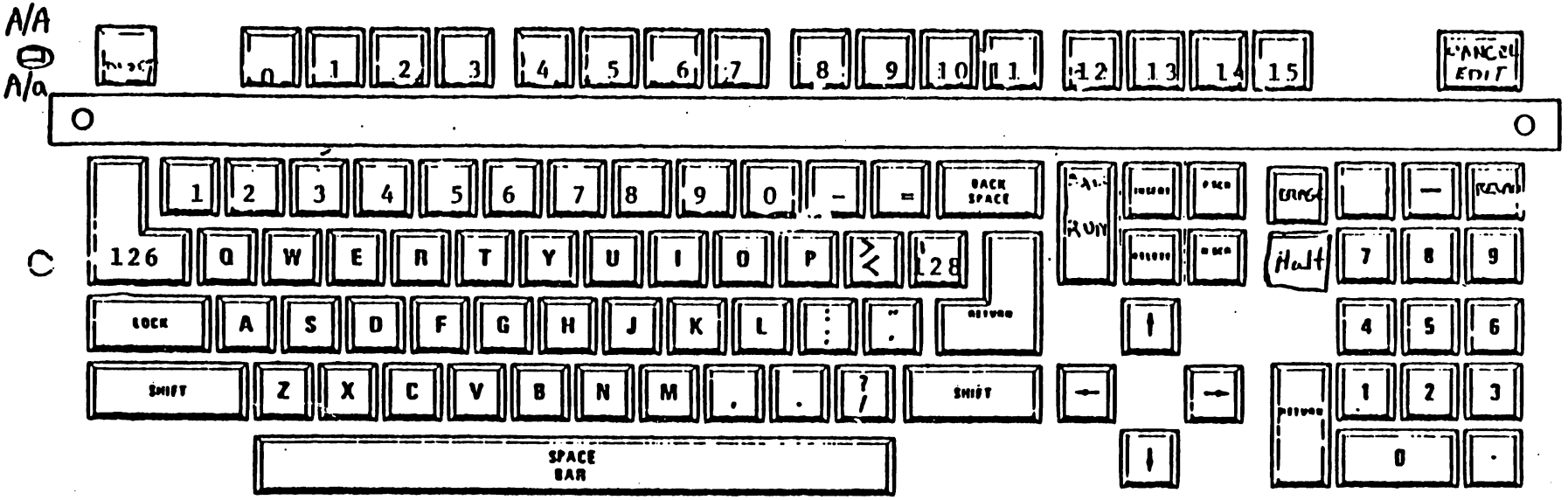
2236 DW Terminal Domestic Version



Toggle Switch: UP
Shift Lock: Either Position
Shift: Pressed

Results:
Alpha: Upper Case
Numeric 1 Symbols
Numeric 2: Numerals
S.F. Keys: 16-31
Continue: Not Active
Reset: Active
Halt : Active

2236 DW Terminal Domestic Version



Toggle Switch: Up
Shift Lock: Either Position
Shift: Not Pressed

Results:
Alpha: Upper Case
Numeric 1: Numerals
Numeric 2: Numerals
S.F. Keys: 0-15
Continue: Active
Reset: Not Active
Halt: Not Active

"Special Keys" and Behavior for 2200 Sub Menus

On a given menu, there are basically two types of fields: a) option selection fields, and b) text entry fields. The following is a description of the behavior of so called "special keys" within and outside the context of each field.

I. Option Selection Field Keys

A. SPACE: (X20) — Move acceptance block to next field entry beyond current cursor position. Key is operative only if the cursor is currently located in a live area of the field.

B. BACKSPACE (X08): — Move acceptance block to previous entry before current cursor postion. Key is operative only if cursor is currently located in a live area of the field.

C. RETURN (X0D): — Move acceptance block to current cursor position and move cursor to either a) position of acceptance block for next field, if next field is an "Option Selection Field" or b) to the first location of the text entry field if the next field is a "Text Entry Field". Key is operative only if cursor is currently located in a live area of field.

D. TAB (X7E): — Same as RETURN.

E. BACKTAB (X7F): (Shift TAB) — Move acceptance block to current cursor position and move cursor to either a) position of acceptance block for previous field, if previous field is an "Option Selection Field" or b) to the first location of the text entry field if the previous field is a "Text Entry Field". Key is operative only if cursor is currently located in a live area of the field.

II. Text Entry Field Keys

A. SPACE (X20): — Destructive space. Move cursor one position to the right as long as the cursor remains in an active area. At the end of a TEF, "space" moves the cursor directly to the next field.

B. BACKSPACE (X08): — Destructive backspace. Move cursor one position to the left as long as the cursor remains in an active area. Otherwise, the key will have no effect on cursor movement.

C. RETURN (X0D): Terminates text entry and moves the cursor to the next defined field.

D. INSERT (X4A): Shift the string beginning at the cursor and to the right of the cursor one position to the right, adding a space to the string at the cursor.

E. DELETE (X49): Delete character currently under the cursor and shift the string that is to the right of the cursor one position to the left.

F. ERASE (X48): Erase text starting at current cursor position to the end of text.

III. General Keys

A. North (X46): Move cursor one position north. If the cursor is currently in the first row, cursor moves to the last row of the same column.

B. South (X45): Move cursor one position south. If the cursor is currently in the last row, cursor moves to the first row of the same column.

C. East (X4C): Move cursor one position east. If the cursor is currently in the last column, it moves to the first column of the next row. If the cursor is currently in the last column of the last row (column 79, row 23), it moves to the first column of the first row (column 0, row 0).

D. West (X4D): Move cursor one position west. If the cursor is currently in the first column, it moves to the last column of the previous row. If the cursor is currently in the "home" position (column 0, row 0) it moves to the last row in the last column (column 79, row 23).

E. EXECUTE (X82) (RUN): Leaves data entry subroutine with selected options and an EXECUTE flag.

F. CANCEL (XF0) (EDIT): Cancel data entry mode. Leaves data entry subroutine with a CANCEL flag.

G. NEXT SCREEN (X42): Leaves data entry subroutine with a NEXT SCREEN flag.

H. PREVIOUS SCREEN (X43): Leaves data entry subroutine with a PREVIOUS SCREEN flag.

Appendix A

The table below lists the hex code values for the 2236 DW which are new and/or redefined on the 2236 DW keyboard.

Key	Unshifted Hex Value	Shifted Hex Value
North (↑)	46+ENDI	56+ENDI
South (↓)	45+ENDI	55+ENDI
East (→)	4C+ENDI	5C+ENDI
West (←)	4D+ENDI	5D+ENDI
Insert	4A+ENDI	5A+ENDI
Delete	49+ENDI	59+ENDI
PREV SCRN	42+ENDI	52+ENDI
NEXT SCRN	43+ENDI	53+ENDI
ERASE	48+ENDI	E5
HALT	84	-
DTAB/RECALL	4F+ENDI	5F+ENDI
RUN	82	A1
Cancel/Edit	F0+ENDI	50+ENDI
TAB (formerly FN)	7E+ENDI	7F+ENDI
GL	7C+ENDI	7D+ENDI

In addition to the keyboard-related changes, five changes to the CRT character set will be made:

HEX	Present	Proposed
5F	left arrrow	down arrow
7F	cents symbol	up/down arrow
8D	up/down arrow	left arrow
80	blank	dotted space
8F	paragraph	page character

WANG LABORATORIES, INC.

DATE: MARCH 23, 1981

SUBJECT: 609-15, PRINTING FROM 2200 WORD PROCESSING

2200 Word Processing classifies all printers that it supports as either line printers (which will typically be used for draft-quality printing) or character printers (which will be used for letter-quality printing). Only the 2281W and the 2281WC are treated as character printers; all others are treated as line printers. It should be noted that the 2281 (i.e., the Diablo daisy printer) must be identified as a line printer - it will not respond properly to all of the device control commands used on the 2281W.

For the Word Processing software to work properly with the 2281W printer, it must have certain microcode changes installed - these changes are included in ECN 17184 issued on November 11, 1980. All 2281W printers produced after some date in late 1980 or early 1981 (Unfortunately, I can provide no way for a customer to determine if the change has been included, except for the program below.) should have the correct microcode. The microcode change allows the software to de-select the printer (e.g., between pages on single-sheet feed).

The following guide program can be used to test the printer for the presence of the proper microcode:

```
10  SELECT PRINT 215
20  PRINT "The Printer will now de-select"
30  PRINT HEX (02070F)
40  PRINT "This should not appear until you have re-selected the
    printer"
50  END
```

Distribution:

0071C

WANG LABORATORIES, INC.

TO: [redacted]

FROM:

DATE:

SUBJECT: 2281W MICROCODE AND THE 2200 WP PACKAGE

To keep you up to date, the following changes are underway to make the 2281W Daisy printer work better with the WP software package.

1. 7443 Board. This board is the usual one shipped with all 2281W printers which do not require a twin sheet feeder or an envelope feeder. We have finished adding a software deselect function to the microcode on this board. This will allow the WP to produce multi-page single sheet documents by deselecting the printer between sheets. (This feature currently works only on the 7309 board.) We have turned over a set of new proms to Jerry Sevigny and to Stan Neumann for final Q.A. I expect that we will formally release the ECO to Judy Mulno by July 21. Since there have been several customer inquiries concerning the operation of the 2281W in this manner, the ECO should be pushed through as soon as possible.

2. 7309 Board. This is the usual board installed in the daisy printers which are ordered with twin sheet feeders or envelope feeders. The software deselect feature was included in the last release of the 7309 microcode. The 2200 WP group requested that we make two additional changes to facilitate operation of the WP package. The first of these is to allow the software deselect to be executed from anywhere within a line. This would allow 'STOP' codes to function on the 2200 as they do on the OIS. The second change relates to the use of the TOP OF FORM key and the SET HOME key on the daisy chassis. The original daisy microcode allowed an operator to deselect the printer, move the platten and print head using the printer's keyboard, and examine the printed output. Upon reselecting the printer, the paper would automatically return to its original position, and the printed output would continue. A problem arose when the TOP OF FORM key was used to eject paper from the carriage prior to loading another sheet. The correct procedure for doing this was to DESELECT the printer, press TOP OF FORM to eject the page, press SET HOME for the new page, and re-SELECT the printer. If the operator neglected to press SET HOME, the carriage would roll back to its previous position when SELECT was pressed. We have decided to alter the 7309 microcode to remove the necessity of pressing SET HOME in the above procedure. We expect to have a new release of this code available for Jerry and Stan to use by July 24. The formal ECO should be ready for Judy Mulno shortly after that.

PS/lmp

Attached are copies of the original release memorandums which have been sent to Judy Mulno for changes made to the microcode for the 2281W/WC and 2281P printers. These changes affect both the 7443 - (Wang Daisy with 06 wheel) and 7309 versions of code. The code revision was necessitated by the addition of a Word Processing Package to the 2200 Product Line.

The 7443 board is used in printers which do not have a twin sheet feeder or an envelope feeder. It does not support all 02 escape code sequences - (only the Deselect Printer - Hex(02070F) sequence). The 7309 board supports twin sheet feeder as well as all 02 escape code sequences.

210 - 7309

SUBJECT: 2281W / 2281WC DAISY PRINTER MICROCODE ECO - 7309 BOARD

An ECO needs to be issued to upgrade the PROMS used on the 2281W and 2281WC printers. This ECO applies only to the 7309 board. The changes to the microcode were necessitated by the addition of a 2200 Word Processing Package. Word Processing uses the Deselect (02070F) Escape Code to be handled as a "stop code". This signals the user to feed in another paper. The current 7309 version of code must be changed to handle this sequence differently to meet WP's needs. WP needs the deselect sequence to work as follows:

PRINT "DESELECT SEQUENCE";Hex(02070F);" AS USED BY WP"

Where the printer becomes deselected immediately after printing out "DESELECT SEQUENCE". This enables the user to feed in another page so that printing can resume immediately on a new page.

This version also deals with a keyboard top-of-form problem. Currently, whenever the user hits the top of form key the page moves to the correct location. But, if the user hits the select key the paper will then return to the previous home location to resume printing. The change will cause the top-of-form key not to be affected by hitting select - it will not return to the previous home position.

This release will fix a problem which exists when the set left margin is used in conjunction with a 2200 suppress line feed. ie./PRINT HEX(E80060);/ This caused the first item printed after this statement to be offset by double the Set Line Feed amount.

MODEL = 2281W / 2281WC WANG Daisy Printer with WANG 06 wheel
BOARD = 7309

OLD PROMS	NEW PROMS	LOC
378-2554R4	378-2554R5	L08
378-2555R4	378-2555R5	L07
378-2556R4	378-2556R5	L06
378-2557R4	378-2557R5	L05
378-2558R4	378-2558R5	L04
378-2590R4	378-2590R5	L03
378-2559R4	378-2559R5	L01

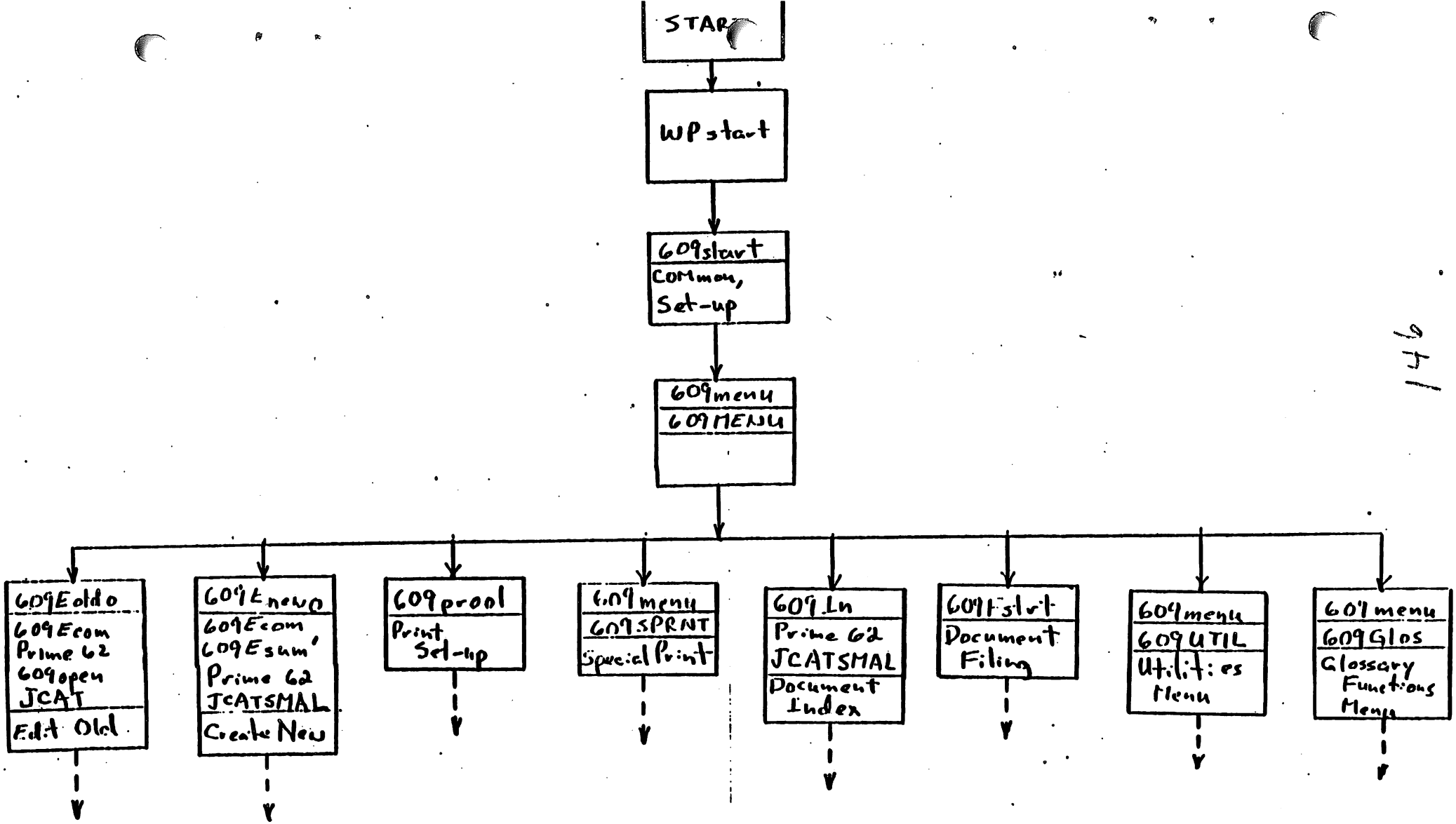
SUBJECT: 2281W / 2281P DAISY PRINTER MICROCODE ECO - 7443 BOARD

An ECO needs to be issued to upgrade the PROMS used on the 2281W and 2281P printers. This ECO applies only to the 7443 board. The changes to the microcode were necessitated by the addition of a 2200 Word Processing Package. Word Processing uses the Deselect (02070F) Escape Code to be handled as a "stop code". This signals the user to feed in another paper. Currently, the 7443 version of code does not support any other '02' escape code sequences as there is limited room in the microcode for changes. The deselect sequence has been added to meet WP's needs.

MODEL = 2281W / 2281P WANG Daisy Printer with WANG 06 wheel
BOARD = 7443

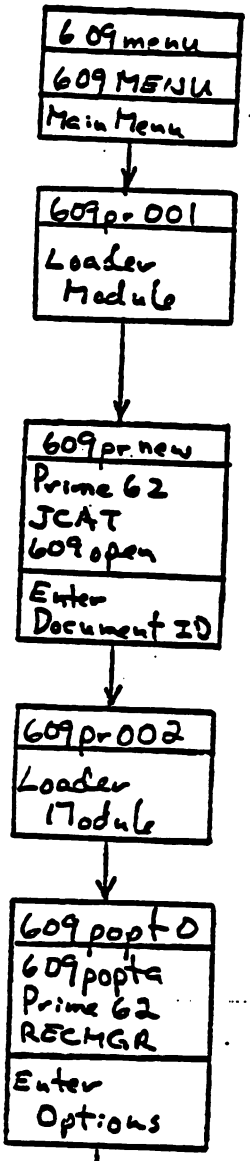
OLD PROMS	NEW PROMS	LOC
378-2458R4	378-2458R5	L12
378-2459R4	378-2459R5	L11
378-2460R4	378-2460R5	L10
378-2461R4	378-2461R5	L09

GENERAL HANDOUTS

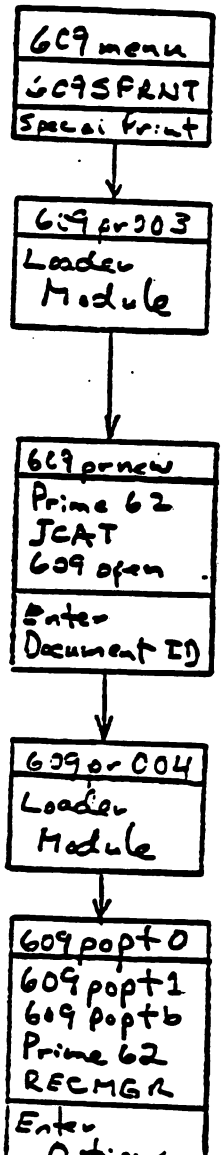


2200 WORD PROCESSING
SYSTEM FLOW

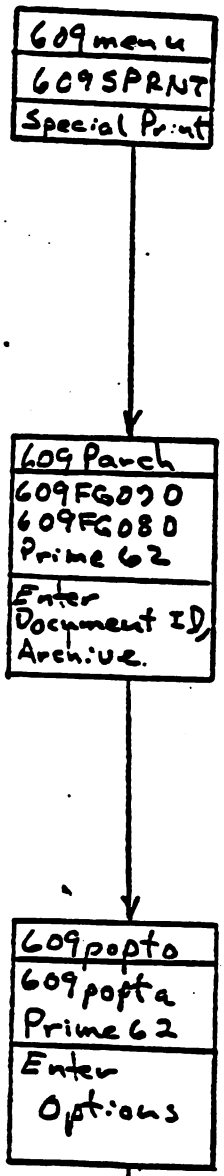
PRINT DOCUMENT:

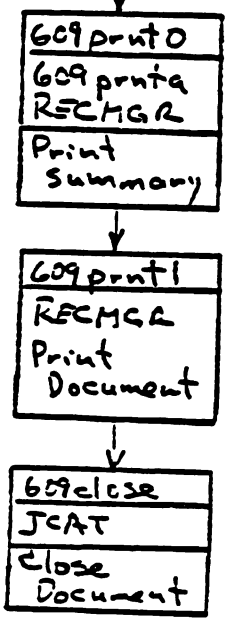


CRT IMAGE:



PRINT FROM ARCHIVE:





WANG LABORATORIES, INC.

MEMO TO: DISTRIBUTION

FROM: [redacted]

DATE: FEBRUARY 11, 1981

SUBJECT: WP/TC CONVERSION UTILITIES

Included in the current release of the 2200 WP Package are two additional utilities: 1) Convert WP Document to TC file, and 2) Convert TC file to WP Document. These utilities should facilitate the integration of 2200 WP and the 2200 TC Utilities.

The combination of TC files and Release 6 of the 2200 TC Emulators will allow for document transfer between the 2200 and other WANG systems. At this time, the 2200 cannot handle document transfer to other than Wang systems.

The TC protocol used by the special 2200 Emulators is wps, which is the protocol used to transmit WP documents between WP, OIS, VS/WP, and now 2200 systems. The 2200 TC file format is unique to the special version of the 2200 TC Emulators being used.

Convert WP Document to TC Data File

This utility will convert 2200 WP Documents (currently BASIC-2.5 files) to TC Data Files (currently BASIC-2 files) which conform to the wps protocol format.

The user is first prompted for the WP document to be converted. If a valid WP document was specified, the user will be presented with the Document Name, Operator, Author, and Comments fields for verification. If the user hits CANCEL, the process will restart.

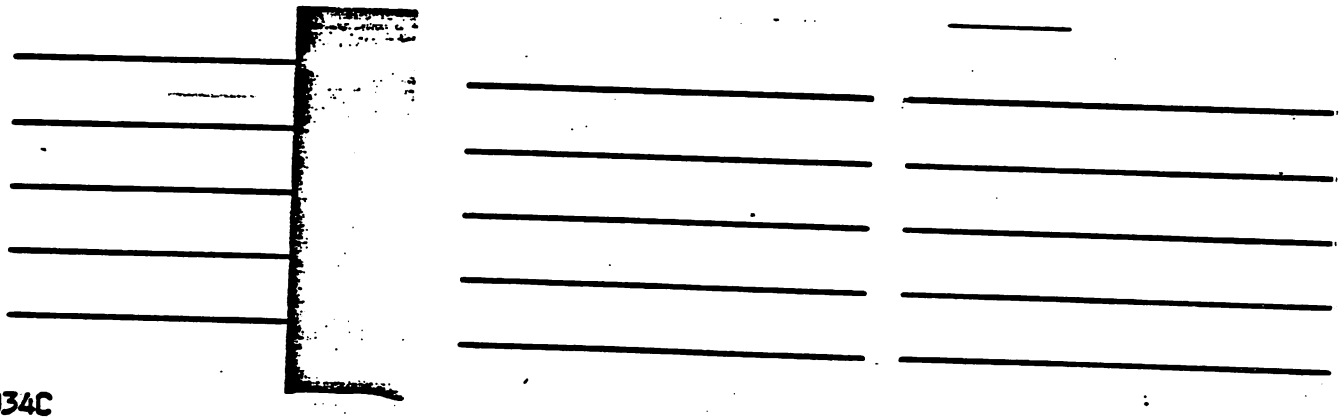
The user is then prompted to enter the name and address of the TC Data file to be created in the process. (Note: The utility will attempt to re-use any scratched files). If the utility encounters any errors in the process, the user will be prompted with an appropriate error message.

Convert TC Data File to WP Document

This utility will take a 2200 TC data file created by the 2200 TC utilities package and convert the file to a 2200 WP document.

The user is first prompted for the name and address of the TC data file. This information is verified and any errors will be presented to the user. The user is then prompted for the ID of the WP document to create. The default is the document ID specified in the TC Data File.

The user is free to change the output ID to any legal document ID on the users' 2200 WP system. This information will be verified and any errors encountered in the process will be presented to the user.



0034C

WANG LABORATORIES, INC.

PASSWORDS

Document Number: 609-12
Warning: The contents of this document are of a confidential nature. Please handle with care.

Introduction

Password protection is provided at both the volume and document levels on the 2200 VP. It is not a fail-safe method, but with proper administration should ensure reasonable security against non-programmers. Volume security affords the supervisor control over the system, while document security can be used by the typist as desired. Passwords are not a requirement at either level. They should always be used judiciously, as it can be difficult to ascertain a lost password. Document passwords are not used for verified glossaries, although they can be used to protect the glossary document entered by the typist.

Topics of Discussion

I. User's View

- Volume Passwords
  - Administration of volumes
  - Entry of password
  - Protection offered
- Document Passwords
  - Existence of password
  - Entry of password
  - Password assignment to new documents or glossaries
  - Method of protection
  - Changing Passwords

II. Programmer's View

- Volume Passwords
- Document Passwords
  - Determining unknown password
  - Variable usage
  - Menu display subroutine
  - Menu password entry subroutine

7. [illegible]

[illegible] passwords

Volume administration

The system administrator will normally handle the creation and maintainance of volumes. Since a volume is just a catalogued BASIC-2 file, it can be scratched or moved by anyone with normal programming capabilities. Password protection only works insofar as this file is used by WP. Once outside of WP, a programmer can do anything to a volume he could do to any other file. The administrator would assign a password to a new volume to protect it from someone changing the address, deleting it from the system files, or changing document passwords within that volume.

Entry of password

The volume password is an eight character alphanumeric field entered when a volume is created through the volume maintainence program in the supervisory functions. The field is masked out during entry (the characters are not displayed as they are entered, although the cursor indicates position), so the operator must be alert to the position of his toggle switch and shift button. Once entered, there is no way a non-programmer can determine the password. Any alphanumeric character can be used in building a password.

Protection Offered

1. Changing volume addresses requires entry of the correct password.
2. Deleting volumes requires entry of the correct password.
3. Changing document passwords for a range or a library of documents requires entry of the correct volume password.
4. [illegible] volumes requires entry of the correct password.

[illegible] PASSWORDS

Existence of Password

Passwords are used by the system when they are entered in any of the menus. If someone has entered a password into the system, the message "Password Active" in bright characters is always displayed at the lower left of the menu screens. If no password is in memory, no message appears.

Entry of Password

To enter a password into the system, the user strikes the command key, then the character "*" while any of the menus are on the screen. When the prompt "ENTER PASSWORD _____" appears at the bottom of the screen, type in any password up to six characters, followed by EXECUTE. Nothing will appear on the screen during entry, although cursor movement will indicate the action taking place. The user should type carefully, remembering each keystroke. The longer the password, the more protection the system will provide. Valid characters are a-z, A-Z, 0-9 or blank. If an invalid character is entered, the message "Re-enter acceptable password" will appear to the right and the user will start over. To excise an active password from the system, the user just EXECUTE's as soon as the prompt appears. The password is effectively blank.

Password Assignment

If an active password is in the system, as indicated by the message below the menus, it will be assigned to all documents created. Otherwise, the files will be unprotected. The password will also be assigned to glossary documents (the ones originally keyed in by the typist), although the verified glossary used for text retrieval cannot be protected. See the memo on glossaries for further explanation of the difference between the glossary document and the verified glossary.

Password Protection

Whenever the user attempts to edit, print or file a document or glossary document, the system checks that file's password against the "active" password in memory. For all functions, an error message is generated when the wrong password is entered or in memory. For the filing function, the system subsequently issues a special prompt to re-enter the password. For some of the other functions, the system returns to the first screen of requests, for others, it returns to the menu. The following table indicates the success or failure of the open depending on the condition of the active password and the file password:

Active Password	File Password	Open
blank	blank	yes
"abcdef"	"abcdef"	yes
"abcdef"	"ghijkl"	no
blank	"abcdef"	no
"abcdef"	blank	yes

The message "Incorrect password" appears whenever the file cannot be opened. If the user knows the correct password, he can return to the menu, enter it, and attempt the procedure again, otherwise he will have to abandon.

Changing Passwords

This program, accessed by selecting the Utilities menu from the system menu, then the Supervisory functions, provides the ability to change document passwords. It first gives an individual range/all option on the left hand side of the screen, followed by additional questions on the right. Names of files being modified are displayed left to right and line by line on the lower half of the screen. The program returns to the option selection at the upper left on completion. If many changes are made, the listing of files at the bottom of the screen is never erased, but does wrap from the lower right to the upper left if full.

For the individual option, the system requests a document ID, the old password, and a new password, where both password fields are not displayed on the CRT. An incorrect old password will result in an error message.

The range option allows the user to assign the same document password to a numeric range of documents within the same library. It requires entry of four digit starting and ending document numbers, a library name, the volume password and the new document password. The starting and ending document numbers need not represent existing documents. Again, both password fields are non-echoed for protection. The volume password is for the volume the library is currently assigned to. The security was designed assuming the administrator who assigns volume passwords would have higher security rights than the typist who assigns document passwords, so it made sense to require a volume password to change batches of document passwords. This option can be used to clear or change an unknown password for an individual document, by specifying the starting and ending document the same.

The change library option functions like the range, but assumes the starting and ending document numbers are 0000 and 9999 so does not request them.

WANG LABORATORIES, INC.

GLOSSARIES

SUBJECT: 609-11, 2200 WP Glossaries

INTRODUCTION

Glossaries are a word processing aid that automate text entry during document creation. Previously entered text stored in a glossary file can be recalled and inserted in another document. Up to 82 different passages of text can be read independently from the glossary file, each accessed by pressing the glossary button and a single character called the glossary entry label. Initially text including formatting characters may be recalled, but storage of action keys for editing, searching or moving will not be supported.

TOPICS OF THIS DOCUMENT

I. External View
   A. Glossary creation and verification
   B. Glossary names and usage
   C. Glossary formatting
   D. Keywords supported
   E. Error messages

II. Internal View
   A. Changes to editor
   B. File structure
   C. Program names and flow

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I. EXTERNAL VIEW

A. Glossary Creating and Verifying

To create or edit a glossary, the user will first select the glossary functions from the system menu, then the desired function from the glossary menu. He will enter a glossary ID, which is in every way the same as a document ID. Any valid library can be used. Password protection will operate in the same way for glossaries as it does for documents. Active passwords will be assigned to new documents and checked before accessing old ones. The editing process itself will be exactly the same as for documents. If another glossary is currently attached, the typist may even use the glossary key to retrieve text from that document. When the user cancels out of the editing process, he will be given the option to verify his glossary. He can cancel to refuse, whereupon he will return to the glossary menu, or enter execute to accept. Before returning to the menu, the user will then be given the option to attach the glossary, so that he can recall text while editing some other document. If verification fails, the error type and page number will be displayed, again with an operator wait. Upon hitting "cancel", the user will re-enter the editor, beginning where the error was detected.

B. Glossary Names and Usage

Permissible glossary names will be a-z, A-Z, 0-9 and the following: !@#$%&*()-+= |'";:/?.,[] To use a glossary while creating or editing a document, the user "attaches" a glossary, then strikes the glossary button and the glossary label to have the text under that label inserted in the document.

Glossary names are entered in the same format as for WP. Up to 82 glossary names can be assigned from the list of acceptable characters listed above. Each glossary name will be on a new page, so the user will have to execute a page function at the end of text under a glossary name. Of course, any number of page format characters can be typed in as (-PAGE-) within a given glossary entry, to appear on the output text, keeping in mind the 120 page restriction for documents and the 4K limit on the size of the "source" page.

To use a glossary while editing a document, the glossary must be attached. This option is given at the end of glossary editing, but is also provided as an option in the glossary menu. The system requests the glossary ID, and attaches. A corresponding detach function is also provided, which will just detach whatever glossary is currently attached. However the user attempts to attach, if the ID does not exist, is not a glossary, or has not verified successfully, an appropriate error message will be printed.

Assuming someone is editing a document and has attached a glossary, he can retrieve text from that glossary by striking the glossary key and the appropriate glossary name. The text will be inserted in the document just as if the operator was typing it in manually. Although the glossary has been verified for errors, some might still arise if a page or document overflow occurs. These would be handled in the normal fashion. Glossary text can be accessed as often as desired. The user should remember that the resulting text he sees inserted in his document may not resemble the text he entered while creating the glossary. Format or editing characters entered in the usual way at that time will have been stripped out, and keywords he typed in manually in parentheses will have been translated to the usual format/editing characters. These two functions are performed by the verify routine.

If an error occurs during document editing while using the glossary, a utility called clear glossary in use frees up the glossary file, just as a similar utility frees up the file being edited. An additional utility will allow the user to delete the glossary object files. The normal delete utility permits the user to remove the source glossary files.

C. Glossary Formatting

One of the features of the glossaries is that text can be formatted one way for purposes of glossary editing but another way for insertion in other documents. This may be confusing initially, but practice should overcome any difficulties. The formatting of the "source" text is handled normally, but output formats or editing characters must be entered by typing out the format name, enclosed in parenthesis. For example, to generate a return in the output text, the user enters (-RETURN-) in his source glossary.

To facilitate entry of these keynames, the user can initially build a glossary with a keyname under each glossary label, assigning glossary labels as he chooses. Attach this "core" glossary during glossary editing and keynames can be entered with two keystrokes.

The verify program, in addition to checking spelling of keynames, correct entry of glossary names, and pagination, will also monitor the syntax of the keynames. Format lines will be checked for validity, centering must be reasonable and so on. Error messages will be generated where appropriate.

D. Keywords Supported

A list of valid format keynames follows:

(-INDENT-)
(-PAGE-)
(-CENTER-)
(-DEC-TAB-)
(-MERGE-)
(-DON'T-MERGE-)
(-NOTE-)
(-STOP-)
(-SUBSCRIPT-)
(-SUPERSCRIPT-)
(-TAB-)
(-RETURN-)
(-COMMAND-)
(-UNDERSCORE-)
(-FORMAT-)
(-BACKSPACE-)
(-EXECUTE-)

E. Error Messages

The following error messages may appear on line 23 of the CRT to indicate various error conditions, in any of the programs affected by glossaries. They are listed in alphabetical order.

"Damaged Document" - the verify program has found has an error in the source file.

"Duplicate glossary label" - the same glossary label has been used twice within one glossary

"Glossary contains no retrievable text" - the user has set up a glossary label correctly, but there is no text in the document that would be retrieved.

"Glossary ID already exists" - user is attempting to create a glossary with the same ID of an existing glossary

"Glossary ID does not exist" - user is attempting to access a glossary that does not exist.

"Glossary not verified" - the user is attempting to attach a glossary that has not verified properly or was not created by the glossary editor.

"Improper glossary label" - the glossary label does not follow the correct format, i.e. (a) followed by two returns.

"Incorrect format line" - the format line contains illegal keynames or characters, is too long, or has the keynames in the wrong sequence

"Invalid library" - the library character (5th character in glossary name) is invalid or no such library exists

"Incorrect password" - the "active" password in memory does not correspond to the password of a file the user is attempting to attach or edit

"Keyword XXXXX out of syntax" - the user has entered a command keyword without previously entering the COMMAND keyword.

"No glossary attached" - the user is attempting to recall glossary text when no glossary is attached

"No glossary label" - the glossary text is not preceded by a valid glossary label

"No such glossary entry" - the user is attempt to recall text from a non-existent glossary entry.

"Page overflow" - while recalling glossary text, the page boundary has been reached. The user should remember that glossary text is added to another document, so glossary text occupying less than a page could still produce an overflow when recalled.

"Too many pages in glossary" - the glossary contains too many (-PAGE-) keys. Any document, including glossaries is limited to 120.

"(-XXXX is incorrect key name" - the glossary has a misspelled or invalid keyname or the keyname is not preceded by (- or not followed by -)

"XXXX is invalid command" - if the user enters the COMMAND keyname in his glossary source text, a valid command must follow immediately

"82 labels are allowed - X is number 83" - the source glossary has over 82 entries. The verified glossary can only accommodate 82 for space reasons.

II. INTERNAL VIEW

A. CHANGES TO EDITOR

The basic changes to the glossary are listed briefly below:
1. The ability to accept glossary entry labels and pass them to a program which retrieves the glossary entry.
2. The ability to process the buffer received from the glossary read file.
3. Give a verify document option when glossary editing is complete.
4. Be able to re-enter the editor and begin at an assigned place in the document when the verify glossary program detects an error.

B. FILE STRUCTURE

The main points covered here are:
1. Glossary source text stored just as other documents.
2. Glossary object text is stored in node "GLOSSARY".
3. A flag in the object text indicates the file has verified.
4. The first page of the object text is an index.

Discussion:

A glossary will consist of two documents, called "source" and "object". The user creates and modifies the "source" using the glossary editor, but may also change it with the usual editor, and may print it as he desires. It is really the same as any other document. The user's ID for it consists of a four digit number and a letter for the library, such as 1234A. The system generated name for it however would be "DOCUMENT.A.1234", which means node "DOCUMENT", library "A", and number "1234".

Associated with the source, but distinct from it is the "object" document. This file is opened initially when the glossary is created and contains the "compressed" text generated by the verify program. The user cannot directly access this file in any way except to delete it. When the user attaches a glossary for retrieval purposes, this file will be opened in shared mode, and text will be retrieved from it when the glossary key is pressed. Correspondingly, the detach function will close this file. To distinguish it from the "source" file, the "object" file is stored in a different node. The system generated name for "1234A" would be "GLOSSARY.A.1234", with "GLOSSARY" the node, and the library and number the same as for "source".

The text stored in the "object" file will resemble "source" text but will not follow all the rules. Therefore, some of the system utilities like page table rebuild cannot be run on it. A flag in the "object" file will indicate if it has verified successfully. The verify program, in addition to removing format characters and comments, translating keynames to their corresponding HEX values, and removing the underscores, will generate an index to the glossary which will be stored on the second page. The index will contain a sequence of three byte strings, one for each possible glossary name. The first byte will be the glossary name, the next two a binary number giving the starting VAU of the glossary text. Each glossary entry will begin on a new VAU and will contain the name in parenthesis followed by the "compressed" text. This will permit the recall utility to verify that the right text is being accessed.

C. Program Names and Flow

The following is a list of the programs to be created or modified.

609Glos - The menu to access the glossary functions.

609Edit - loaded by 609Esum - text editor has to be modified as described earlier.

609GEpage - loaded by 609Edit - retrieves text from glossary object file and passes it back to editor

609GVer - loaded by 609Edit - verifies source text and creates object text

609Gatt - loaded by 609Glos - requests name of glossary and attaches it if it has verified; object file is opened in shared mode

609GRem - loaded by 609Glos - detach currently attached glossary

609GDel - loaded by 609Glos - deletes object files individually

609FERM - loaded by 609SUPER - frees up files for use

RETURN POSTAGE GUARANTEED

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RELEASE 11 SPECS

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Introduction

Release II of the 2200 Word Processing development project can best be characterized as a continuation of Release I. We will be adding some expanded facilities, and improving some existing ones, but we will not be making any significant changes to either the system architecture, or to the basic way in which the system is presented to the user.

A few general comments on intent and philosophy are worth repeating here.

We are viewing the 2200 as originally and (still) primarily a data processing machine. The advent of Word Processsing on the 2200 significantly extends the capabilities of the 2200 and makes it a much more attractive offering in the marketplace, but it probably will not turn the 2200 into primarily an office machine in the sense that the OIS is an office machnie. Hence, we are not planning to implement, at least as part of this project, some of the newer features of the OIS such as advanced functions, calendar management, magic notebook, etc. Rather, the emphasis of the 2200 Word Processing will be on the effective integration of DP and WP functions. The primary focus of this integration will be with IDEAS, but we will certainly structure the "hooks" in such a way that any application can interact with WP.

Design Objectives

Because we are viewing 2200 Word Processing as an additional application facility on a machine used largely for other, DP type applications, we will continue our objective of imposing as few constraints as possible on the system configuration. For Release I this meant that we would run within any partition of 28K (i.e., half of a bank), and that we would not require the presence of a global partition. For Release II, we will have to modify this somewhat, so that if background printing is to be utilized (this will be optional), a global partition must be allocated somewhere in the machine. However, we would prefer not to require the presence of any particular universal global partition, as this can significantly constrain the configuration. A 56 K version of word processing is not being proposed as part of this release, although it will be considered for a later release.

A secondary objective will be compatibility with existing Release I installations. It will almost certainly be possible to utilize exactly the current document and volume structure for Release II. However, if it becomes impossible (e.g., if we need to change it to support volume revcovery), we will guarantee the ability to archive all documents under the Release I scheme, then retrieve under the Release II scheme.

Finally, we will continue our objective of the highest degree of compatibility with current OIS/WP offerings that is practical.

Functional Overview

As noted above, Release II will consist of a series of extensions to the functionality of Release I. For purposes of this document we will assume familiarity with functions of Release I and with the OIS.

Editor

The following facilities will be added to the Editor:

- Global Hyphenation.
- Repagination.
- Command Note (Document Marking).
- Case-insensitive search.
- (Possibly) More efficient use of memory and disk.
- Entry and storage of keywords.
- Horizontal scroll will not be included in the initial release of release 2.0, but will be available in a subsequent maintenance release approximately 2 months afterward.

Print Functions

The following additional print functions will be provided:

- Background printing, and the associated queue management functions.
- Merge Print.
- Print Document Index.
- Alternating Headers and Footers.
- Merge Print with data from DP files, coordination with List Processing.

Dual Column Print will be omitted, because it appears to have limited value in the environment we are expecting for 2200 WP.

Miscellaneous

- The document page table will be approximately doubled to accomodate retrieval of large documents from OIS/WP archives.
- The advanced filing functions will be added; these include Move and Copy between libraries, archiving with a skeleton document left on the system, the ability to rename a document while filing or retrieving (i.e., Retreive AS)
- Document access from DP programs.
- Document merge with data file.
- Interface to the Batch TC system being developed by 2200 R&D.
- Sorted Document Index and a limited keyword index, implemented with the same kind of mechanism as the document index.
- Volume recovery.
- Cooperation with MAILWAY functions will be supported.
- A Spelling verifier and a facility similar to Glossary by example are under consideration for future releases, but they will not be included in Release 2.

We will not have the following facilities which are available on the OIS:

- Sort document (Utility Functions)
- Command keystroke glossaries (e.g.,move, search, menu selection, etc.)
- Paragraph files (Supervisory Functions)
- Calculator
- Automatic Paragraph Numbering/Table of Contents Generator
- Index Generator
- Document Summary Collection
- Column Edit
- Multiple option on the Document Filing screen

Advanced Filing

Advanced filing contains several functions which allow the user to do some specialized filing applications with a minimum of effort (i.e most of these functions could be done through a series of steps in WP). They are :

- Move a document from one library to another
- Copy a document from one library to another
- Retrieve, copy and file a document under a different document ID
- File document and leave skeleton

These functions are explained below.

Move Document Between Libraries

This function would allow the user to move a document from one WP library to another. The user would be prompted for the document ID of the document to be moved and the destination document ID. The destination document ID may be a specific ID or the user may specify the NEXT convention. Using the NEXT convention the user would enter something like 'NEXTA', where A is the destination library. The system will generate the next document ID in that library and display it to the user before continuing. Once the process is completed, the original document will not exist in the original library. The document will exist in the destination library specified and the document ID will be the one last presented on the screen. For example, when moving document 1234A to library B, the user may enter 1234B, provided document 1234B does not already exist, or the user may use the NEXTB convention. This function may or may not be the equivalent of a rename operation depending on whether both of the libraries involved were contained in the same volume.

Copy Document Between Libraries

This function would allow the user to copy a document from one WP library to another. The user would be prompted for the document ID of the document to be copied and the destination document ID. The destination document ID may be a specific ID or the user may specify the NEXT convention. Using the NEXT convention the user would enter something like 'NEXTA', where A is the destination library. The system will generate the next document ID in that library and display it to the user before continuing. Once the process is completed, both the original document and the new copy of the document in the destination library will exist and will be equivalents. For example, after copying document 1234A to library B, document 1234A and 1234B will exist.

Copy Document with Rename

This function would allow the user to copy a document to archive in much the same way as in document filing. After the user is prompted for the system document id, the user would then be prompted for the id of the document to be created/copied on the archive. The document will be copied normally except that the archive document's id will be different from the document id of the system document it was copied from. For example, document 2222B exists on the system. The user may copy document 2222B as document 3333A, or whatever document id the user has in mind, onto the archive.

File Document with Rename

This function would allow the user to file a document to archive in much the same way as in document filing. After the user is prompted for the system document id, the user would then be prompted for the id of the document to be created/filed on the archive. The document will be filed normally except that the archive document's id will be different from the document id of the system document it was filed from. For example, document 2222B exists on the system. The user may file document 2222B as document 3333A, or whatever document id the user has in mind, onto the archive.

Retrieve Document with Rename

This function would allow the user to retrieve a document from archive in much the same way as in document filing. After the user is prompted for the archive document id, the user would then be prompted for the id of the document to be created/retrieved in the system library. The document will be retrieved normally except that system document's ID will be different from the document ID of the archive document it was retrieved from. For example, document 2222B exists on the archive. The user may retrieve document 2222B as document 3333A or whatever document ID the user has in mind.

Archive and Leave Summary

This function allows the user to file a document to an archive and leave a 'skeleton' of the document in the WP library. The skeleton would contain a page table, only pointing to the admin and the first text page VAU, the document admin, and a minimum text page containing a new page format line and some appropriate text stating "This is only the skeleton document". A skeleton document can not filed. Only the document summary page of a document can be printed. This same information may be displayed using the initial phase of the editor, i.e. where the document summary information is displayed, but no modification of text may take place in the document summary or in the actual text page(s) available. The skeleton may also be deleted from the library it was contained in. If the user wishes to retrieve the actual document from archive, the skeleton document will be deleted in the process before retrieving.

Background Print and Queue Management

Under Release 2 of 2200 Word Processing, documents may be printed in any of three ways:

(1) Immediately, in foreground (i.e. the terminal is unavailable until the print is completed). This is the mode in which print now functions under Release 1.

(2) The request is entered into the print queue for subsequent foreground print from the queue; here the terminal is still tied up, but several documents may be printed in one session, rather than one at a time (as in #1)

(3) The request is entered into the print queue for background printing; the background print task may or may not be running at the time the request is entered into the system.

Associated with the queue-oriented requests are the following queue-management functions, which will appear on the special print functions menu:

(1) Cancel Print request

(2) Select Next Printed Document

These functions will behave exactly like the equivalent functions on the OIS, so they do not need detailed description at this point.

Note that all of the functions described above apply to simple (i.e. single) document print as well as merge print and merge print with data (described elsewhere).

Finally two functions will appear on the Special Print Functions that are associated with Document Index:

(1) Print Index

(2) Cancel Index Print

See the section on Document Index for a discussion of these.

A description of the internal functioning of the print queue and the queue management functions is included in a document attached to these functional specifications.

Document Handling Subroutines

The document handling subroutines provide a data processing interface to 2200 Word Processing. These subroutines allow the programmer to directly use WP documents as data processing input and output 'files'.

Each subroutine performs a specific operation on a WP document in a chain of operations necessary to perform the user's application. A list of the subroutines available :

Create and initialize a WP document

Open an existing document

Close document

Delete document

Get administrative information

Write administrative information

Go to a specific page in the document

Read current page from the document

Write/Insert new page into document

Append a new page into document

Rewrite/Replace current page in document

Delete current page in document

Search for a given string in the document

Change document password

Place a document in queue

Attach glossary

Call glossary

Detach glossary

Details on the operation of these operations follows.

The first release of the document handling subroutines will only deal with full page data transfers. For example, the user will only be able to read an entire page into memory, not just a specific part of the page. A future release is in mind which will have this capability and will operate in much the same way as the OIS/VS document routines operate. These enhancements are noted throughout this section.

Create and initialize WP document

This routine allows the user to create a WP document in a given library with or without a password. The document id may be specified by the user or the NEXT convention may be used so that the system generates the next document to be created on the specified library. In any case the document id used will be availiable to the calling program upon return from the routine.

The newly created document will be an exact copy of the prototype document for the specified library. The routine will automatically call the open document routine before exiting.

Open document

Any existing document may be opened in shared or exclusive mode provided the document password is specified and there are no access conflicts.

When opened the document status is set to damaged and the page table flag is set to rebuild. These will not be cleared until the close function is executed. If the user program crashes prior to the close or does not close the document, the editor will rebuild the page table upon entry to the Edit Old Document function.

Up to 4 documents may be opened at once.

Upon return from this routine the current page marker will point to page 1 of the document.

Close document

This function will reset the document flag to not-damaged status, reset the page table flag to do-not-rebuild status, close the WPFM file associated with the WP document and free up a file position.

There will also be a "close all" option to this function which will close all documents that are open.

Delete document

This function allows the program to delete a WP document from a specific library. The document must have been opened in exculsive mode.

Get administrative information

This function will return the either :

(1) The current values of the administrative information block of the file (this is the information presented in a document summary) to the user in a specific set of variables or

(2) The current print defaults of the document (this is the information presented to the user on the print options screen) to the user in a specific set of variables or

(3) Both

The structure of this information will be included in the detailed specifications.

Write administrative information

This function updates the administrative information block and/or the print defaults of a WP document via a set of predefined variables which have been updated by the calling program. This function will have the same options as the Get Administrative information structure.

Goto a specific page in the document

This function operates in the same way as it would in the editor. When going to an actual page number, the current page marker will be positioned to the approriate page. For example, (-GOTO-PAGE-) (-999-) will set the current page marker to the last page of the document. The user will be able to access the Footer, Header, and Work page as well as the regular text pages of the document.

This function will not do an implicit write of the current page or read of the page that you are going to.

A future release will be able to do the following as well :

(-GOTO-PAGE-) (-direction-)

(-GOTO-PAGE-) (-PAGE-NUMBER-) (-direction-)

The command (-GOTO-PAGE-) (-NEXT-) or (-PREV-) will not be activated.

Read the current page of the document

This function would return the contents of the current page to the user. This function will not alter the current page marker.

Write/Insert a new page into document

This function allows the user to insert the contents of a specific buffer into the document as a new page. This buffer will not be verified as to it's correctness. The new page will be inserted directly before the current page and the current page marker will remain unchanged.

Append a new page to the document

This function allows the user to add the contents of a specific buffer into the document as a new last page page. This buffer will not be verified as to it's correctness. The new page will be added to the end of the document regardless of the current page marker. Upon return, the current page marker will point to this new last page.

The system will allow a maximum of 116 text pages plus the footer, header and work pages.

Rewrite/Replace current page in document

This function will replace the current page of the document as specified by the current page marker with the contents of a specific buffer that the user has defined. This buffer will not be verified as to it's correctness. The current page marker will remain unchanged.

Delete current page in document—

This function will allow the user to remove the current page from the document. The current page marker will be remain unchanged. For example, if you delete page 3, page 4 now becomes page 3 and the current page marker would still be pointing to page 3.

The system will force the user to retain at least one regular text page in a document.

Search for a given string in the document

The search function will locate the first occurrence of the string passed to the routine in the current page starting at a specific byte number in the page. If the string is found, a return variable will give the byte number where the string begins in the page. If the string is not found, then the return variable would be equal to zero.

This function will do a case insensitive search, in the same way the editor will work.

Change document password

This function will change the password of a document to a new password. The document must have been previously opened in exculsive mode for this function.

Place a document in queue

This function would allow a calling program to enter a document into a specified or default queue. This would be useful for applications which generate a document type output, e.g. A/R reminder statements

This function may have to be postponed to a later release depending on the complexity and availablity of the various queue functions involved.

Attach glossary

This function attaches a glossary to the station for subsequent use in the modification of a WP document by the application program. The attaching of a glossary will open the glossary file for further use and therefore use up one of the 4 slots available for files.

Only one glossary may be attached at one time. Only text recall glossaries are allowed.

Call glossary

This routine would lookup the appropriate text entry glossary and return that text in a specific variable for subsequent use by the program, in much the same way the Read Current Page function will work. It will be up to the user to do any actual insertion of this glossary text into the current page of a document.

A future release will be able to insert the glossary text starting at a specific byte location within the document in the same way the editor works now.

Detach glossary

This function will close the glossary file and detach the glossary from the station.

Document Index

Document Index is a WP function that allows the operator to display all documents that currently exist in a system library or archive (system or diskette). Currently, on Release 1.0, the operator is first required to select whether a library or archive is to be displayed. Next the operator enters the name of the library or archive, depending on which is chosen. Then the option of which documents are desired from that particular library or archive is given. For instance, the operator can choose ALL, or certain documents by a particular Author, Operator, Title, Comment, In Use, or just Recovered documents. All of the displayed documents are currently sorted by Document ID. Since Document ID's for archives are maintained in sorted order, it is only necessary to perform a sort when a library is desired.

Release 2.0 of Document Index will change in two ways. First, there will be an added option in the 'Which Ones' column to display only active documents, i.e.,documents that can still be edited and are not just skeletons of documents that have been permanently archived and contain no text. Secondly, it will contain another Option Selection Field which will allow the operator to specify sorts not only by Document ID, but also by Author, Operator, Title, or Comment.

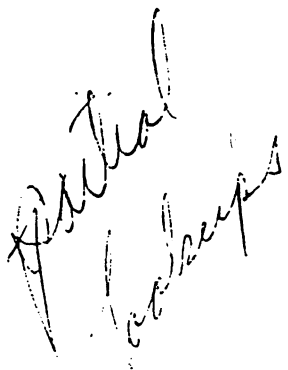
The only additional information that will be required from the operator is the selection of which of the fields mentioned above will be used for sorts and whether or not just active documents are desired. If no specific sort option is selected, it will default to sort by Document ID. If any option other than Active documents is chosen from the 'Which Ones' column, skeleton documents will be displayed and flagged as "archived" instead of "available".

The module that currently sorts by Document ID also handles the "Which Ones" option. This module's function will be reduced to obtaining only certain selections desired and setting up the necessary Documents in the arrays to be sorted. Only these arrays need be sent to the sort module along with the other selection information, i.e., whether a library or an archive was selected. This is necessary since there are two modules that display the documents, one for libraries and one for archives. The sort module will need to know which to load.

There is also consideration being given for a third change in Release 2.0 of Document Index. This may change the method in which string lookups are done for the Author, Operator, Title, and Comment options in the 'Which Ones' column. Currently, the string typed in for any of those options is compared for an exact match to the corresponding field in each document. For example, if "John Smith" were typed in for an author search, then the field in the document containing the author's name must match exactly. Two other methods have been suggested. The first is a partial lookup using the first X-bytes of the string typed. For example, if "John" were typed for the Author option, the first four bytes of the author field would be tested for a match. The second method is a MAT SEARCH using the string desired. For example, if "John" were typed, we would look for the occurance of "John" anywhere in the author field. This method may be slightly slower, but the decrease in speed would be marginal and more flexibility is allowed. This change allows partial lookups, which is very usefull if full names or titles are not known. Please submit your opinions concerning this matter as soon as possible.

Something else that is appropriate to mention here is that printed listings of the Index will be available through a Print Index facility. This program will be run from the Special Print Functions menu. If the operator wants a listing of a particular library or archive, then he will have to enter that particular library/archive name. Otherwise the program will list a complete system index. Also, it will most likely for the operator to enter a printer number since most of the information entered on the print summary screen is not neccesary and such a screen would not be neccesary. The format of the printed listing will be similar with the display in Document Index. More detailed information about Print Index will be available with the design specifications of that facility. Suggestions are welcome.

The net effect will be the ability to display documents sorted by other fields rather than just by Document ID and also to look at only active documents. Only one limit exists, the amount of documents from a particular library that can be sorted. That limit will be determined later through evaluation of actual memory available for buffer space.



Document Merge

Document Merge is a facility that allows the operator to create a new document or documents by merging text that is located in two different documents. The typical application is in the creation of multiple copies of a form letter, with different salutations and addresses for different recipients. It differs from the usual merge print in that the output is not a printed document, but rather a stored, editable document, which can be edited, printed, archived, or sent by TC at will.

The document merge on the 2200 will operate similarly to the corresponding OIS utility, but it will have a few additional options for its use. The operator will be asked to specify the ID of two documents, one of which will be the primary document (the "form letter"), a creation library for the output document(s), an output option, and a merge option.

The merge program assumes that the primary document is a standard form into which variable data or text will be inserted - that data is taken from the second document. The second document may contain enough text to be merged into one or more copies of the primary document; if enough text exists for more than one copy, we will refer to sets of text or data in the secondary document. The document(s) resulting from the merge process are new document(s) created in the specified creation library; they will be assigned document ID's exactly as with the usual create document process. The output option determines whether one or many documents are created - all "copies" or versions of the primary document can be put into the same document, or each "copy" may be an entirely new document.

The rules by which the merge takes place are determined by the merge option - three choices are allowed: Merge by sequence of text, merge by field number, or merge by field name.

When merge by sequence of text is chosen, the procedures are like those on the WP and OIS systems. The first text item (per set) in the secondary document replaces the first merge graphic in the primary document; the second text item replaces the second merge graphic, and so on. The Merge Safeguard (Don't Merge) character will continue to have it's usual meanings.

When merge by field number is chosen, merge will assign an implicit field number to each field in a set in the secondary document; this field number does not have to be explicitly typed into the secondary document, it will be assigned sequentially within a set by the Merge program. Each merge graphic in the primary document must be expanded to consist of the sequence MERGE, NOTE, the field number, NOTE; this is similar to the convention used by Auto-Merge Print in the OIS List Processing package. The oocurences of this sequence in the primary document do not need to be in the same order as the occurence of the fields in the sets of data in the secondary document. Also, any given field may be used any number of times (including no times, i.e. not used) in the primary document. This makes it practical to use the same secondary document for several primary documents. Because the correspondence between fields in the primary and secondary document is not as close, we will require the Merge Safeguard (Don't Merge) to separate sets of data in the secondary document.

Document Merge (cont.)

When merge by field name is chosen, the operation will be almost identical to the OIS Auto-Merge Print in List Processing, except that the data will come from a secondary document instead of a data file. The primary document must contain merge indicators consisting of the sequence MERGE, NOTE, field name, NOTE. In the secondary document, individual fields will be preceeded by the same sequence (MERGE, NOTE, field name, NOTE) - this serve as the definition of field names. When the merge operation takes place, the merge indicators in the primary document will be replaced by the value of the corresponding field in the current set of data in the secondary document. As with merge by field number, any field may be used in the primary document any number of times (including not used at all), and in any order. Also, as with merge by field number, we will require a Merge Safeguard as a separator between sets of data in the secondary document. A Merge safeguard at the very beginning of the secondary document or the very end will be optional.

Editor

The functions described will follow as closely as possible those of the OIS/WP. These include :

- Global Hyphenation
- Repagination
- Document Marking
- Case-insensitive Search
- Memory Efficiency
- Change Variable Usage
- Expand DELETE, COPY, MOVE, REPLACE, SUPER COPY and SUPER MOVE

Global Hyphenation

This is a feature which allows the operator to hyphenate long words at the end of a line to provide for more even right-hand margins or for less space between words when printing with justification. This is an interactive function in that the operator must decide whenever a Hyphenate situation arises.

The operator enters this function by first positioning the cursor to the desired starting point in the text. Touch the COMMAND key. When the prompt "Which Command?" appears touch the Hyphen Key (-) for Global Hyphenation.

The prompt "Zone Length:" will appear. The "zone" is the number of blank spaces on any line between the last character and the right-hand margin. The operator enters the smallest zone length to be considered for hyphenation. The minumum allowed is three (3) and the maximum is ninety-nine (99). Touch EXECUTE to initiate search for "zone".

The system goes through the document searching for a "zone" which is greater than or equal to the zone length specified. When one is found the portion of the next word that will fit in the "zone" is highlighted and the prompt "Hyphenate?" appears. The operator will have several options at this point:

- Touch EXECUTE or Hyphen (-) to insert a hyphen before the current cursor position and search for another "zone".

- Touch BACKSPACE, East or West Cursor to move the cursor to where the operator wants the hyphen. Then EXECUTE or Hyphen (-).

- Touch SEARCH to skip over and make no changes to the current word and search for the next "zone". If the operator wishes to exit Global Hyphenation during the search for the next "zone", touching CANCEL will terminate Global Hyphenation. All hyphens inserted to this point will remain.

- Touch CANCEL to terminate Global Hyphenation. All hyphens inserted to this point will remain.

The system inserts a hyphen followed by a space (-) during Global Hyphenation. This enables the system to distinguish between a hyphen at the end of a line and a "required" hyphen (i.e. mother-in-law). When in Global Hyphenation the system removes all "old" hyphen-spaces as it is encountered. Global Hyphenation automatically terminates when it reaches the end of the document.

Repagination

Repagination allows the operator to automatically reset all the page breaks in logical places - without breaking paragraphs.This is an automatic function in that the system goes through the document deleting and inserting page breaks at positions that are specified by the operator.

The operator enters this function by first positioning the cursor to the desired starting point in the text. Touch the COMMAND key. When the prompt "Which Command?" appears touch the PAGE Key for Repagination.

The prompt "Page Length:" will appear. Key in the desired number of lines and key EXECUTE. The minimum is one (1) and the maximum is nine hundred and ninety-nine (999)

The system goes through the document, deleting all "standard" page breaks ("required" page breaks (Center-Page Break) are not deleted), and inserting page breaks after the last Return character which precedes the "Page Length" specified earlier. If the operator wishes to exit Repagination, touching CANCEL will terminate Repagination. All page breaks inserted to this point will remain.

If a particular page break is not appropriate the operator has the option of changing it's location using the editor functions (DELETE, INSERT and/or MOVE).

Document Marking

Document Marking is a function using the instruction COMMAND, NOTE which allows the operator to mark the cursor's current page, line and position in a document and later return to that location using the instruction GO TO PAGE, NOTE. Only one (1) location can be marked. The cursor will return to the last position marked. The location is lost once the operator leaves the editor via CANCEL, EXECUTE. If text containing the marked location is deleted the system will put the cursor as close to the marked position as it can.

To mark a location the operator performs the following steps:

- Position the cursor to the point to be marked.
- Touch COMMAND, NOTE.

To return to the marked location:

- Touch COMMAND, GO TO PAGE

Case-insensitive Search

This feature allows the operator to search through a document for a character or a sequense of characters regardless of the case. Cases include, for the standard keyboard, upper case, lower case or underlined.

This feature will be incorporated in the SEARCH function for a sequence of characters and in the DELETE, COPY, MOVE, REPLACE, SUPER COPY and SUPER MOVE functions for single characters.

Memory Efficiency

This function will be performed so that we might be able to make better use of memory for the Editor

Change Variable Usage

With the intergration of Word Processing and other applications (List Processing, Mailway, etc.) it will become neccessary to coordinate our variable naming with other groups. The Editor is probably the one subsystem that uses the most variables.

Expand limits of DELETE, COPY, MOVE, REPLACE, SUPER COPY and SUPER MOVE

DELETE, COPY, MOVE, SUPER COPY and SUPER MOVE only allow the operator to perform the function up to and including the Page Break character. REPLACE does not allow the operator to include the Page Break character. We will extend this to go beyond Page Breaks.

This facility will have few limitations. It will be slow since documents will have to be opened. It might be neccesary to search through multiple libraries or a system disk to find specific documents. Otherwise, if keywords are chosen properly, any document can be made unique even if only one keyword is used. The main drawback is the number of libraries needed to be searched, especially if there are many documents in these libraries.

Operator Interface

From an operator's point of view, Keyword Entry and Search will be easy to use. Entry of keywords will be made when a document is created or edited. If the subject of a document is known before a document is created, keywords can be chosen and entered as soon as the document is created. When the document summary screen is displayed, the chosen keywords that will make the document unique can be entered with the document summary information. Otherwise, the keywords can be selected after the document is completed and entered at any time thereafter using the edit document routines. The text entry fields will always be modifiable so keywords can be changed if and when the text of a document is changed. It is not neccesary to include the keywords that are entered with the summary information in the text itself. It is only suggested since remembering keywords can be made easier if the subject, date, or person to whom the document refers to is known.

Using the Keyword Search program will also be simple and useful to the operator. When the facility is chosen from the Utilities Menu and the first screen is displayed, the operator will be required to select libraries or the system disk if no libraries are entered. Then it will be neccesary to type the keyword or keywords contained in the desired document(s). If it is desired to find documents containing more than one keyword or a document is wanted with one or all keywords entered the operator will specify all or any one of the keywords. Then a sort selection can be made.

The overall effect of this method of document lookup is to facilitate finding specific documents. Especially since it is very probable that much of the information for a document will be forgotten, including the Document ID. This utility will help overcome the problem of spending hours finding documents.

Keyword Entry and Lookup

Introduction

Keyword Entry and Search is a 2200 Word Processing facility that allows documents to contain keywords that can be used to find documents. Currently, on the 2200 Word Processing Package - Release 1.0, Document Index is the only existing method of finding specific documents. Even then, in order to be specific, the Author, Operator, Title, or Comment for documents must be known. Otherwise, all documents for a particular library or archive are displayed. This can be a large number of documents. It is also possible for a large number of documents to exist for a certain Author or Operator and only one or two of those documents is desired. A more efficient method of finding distinct documents is neccesary. Keyword Search will provide that method of finding a distinct document.

The Keyword Entry and Search system will consist of two major parts; Keyword Entry for documents and Keyword Search for documents.

I. Keyword Entry

Entry of keywords will be incorporated into the current create and edit document routines. Keywords will be directly attached to each document. The entering of keywords will take place on the current document summary screen. This will require modification of the current create and edit document routines. When a document is created, keywords will be entered on the document summary screen along with the existing summary information. These keyword fields can also be updated during an edit of a document. Entry of keywords will be optional. Once entered, all keywords will be stored on the 'extra page' which will be created when a new document is created. Keywords will be alphanumeric. It is likely that the entering of keywords will be free form. This means that there will be a text entry field of about 150 bytes available for entering keywords. This enables multiple words to be used as a single keyword. A delimiter can be used to determine between seperate keywords. The number of keywords will depend on their individual sizes.

II. Keyword Search

This part of the system will be a completely independent module run from the Word Processing Utilities Menu. It will be very similar to Document Index. It will be capable of displaying documents from a one to six libraries or from the whole system disk if no libraries are specified. Searching for documents containing certain keywords will be fairly slow since it will be neccesary to open the document to read the extra page. Entering keywords will also be free form as mentioned above. There will be an option selection field specifying whether documents with all the entered keywords should be displayed or any one of the entered keywords. MAT SEARCH will be used to search for each keyword so they do not have to be entered in the same order as they were when the document was created. Sorts will also be available for displays. The sort options will be Document ID, Author, Operator, Title, and Comment. When the desired document(s) are found, the screen display will be the same as it currently is for Document Index. If a document is in use, it's ID will be displayed and it will say it is in use although it will not be known what it's keywords are.

Merge Print Document with Data

Introduction

2200 WP will support both a "simple" merge print, in the traditional OIS/WP fashion, and a merge print with data. In order to understand what Merge Print Document with Data is going to achieve it is necessary to understand the concepts used in Merge Print, which follow:

Merge print is a WP facility which allows a user to print two previously created documents (with merge codes) as one finished document. The two documents are:

(1) A primary document. Usually a standard letter or form with merge codes typed wherever varying information is to be inserted.

(2) A secondary document. Usually a lengthy 'file' of names, addresses, etc. along with other varying information to be inserted in to the primary document. Merge codes follow each piece of information.

Merge Print operates by printing the information contained in the primary document in much the same way as a normal print except when a merge code is detected in the primary document. At this point the facility will then read the next string of data, delimited by a merge code, from the secondary document, print that string of data and continue printing the primary document.

Merge Print Document with Data will execute in the same manner as the Merge Print facility, except that the varying information which is usually contained in the secondary document will be located in an actual 2200 data file.

This facility is being developed by the 2200 Data Management Utilities Group (Stan Fry, et al). This spec is just to mention that the appropriate interfaces will be available in the print modules to be activated by such utilities as List Processing and Data Dictionary access. These interfaces will be publicly documented and available for any other applications that may be desired (e.g. to interface documents with SPEED or AIMS files).

Document Merge with Data

This facility will operate in the same way as regular Merge Print Document with Data except that the output will be in document form instead of print outs. This facility is in effect a combination of the ideas formed in Merge Print Document with Data and regular Document Merge. For an explanation of how these work look to the appropriate chapters.

Future Plans

Any comments here should not be treated as a commitment in any way, or as representative of a formally approved, scheduled project. They are intended only to indicate the areas we currently see as candidates for future development with the WP project. They are provided now in the hopes that people will begin to think about what features should and should not be included in futures releases.

The most obvious and pressing need is for a version of WP that will run under Basic-3 and the new FMS. In the interests of speed of development, this version will probably be functionally identical to Release 2 under Basic-2. However, because we will no longer need the WPFM file access logic as part of the Basic programs, it may be possible to eliminate some of the program overlays necessary in Release 1 and 2.

A 56 K version of WP should be investigated - this may make it possible to improve the overall performance of the system, by eliminating many of the program overlays that are necessary in a 28K partition (many of these overlays will still be necessary under Basic-3 and FMS).

The editor should be enhanced to support horizontal scroll. This feature may have to be tied to the 56K version because of the increase in processing logic necessary to support horizontal scroll. At the same time, it would be desirable to extend the limits on page size beyond 4000 characters - this will be particularly important with horizontal scroll, but will almost certainly require more than a 28 K partition.

A spelling verifier, and a glossary creation tool that is similar to the OIS glossary by example are two features that would be highly desirable.

The possibilities of some form of decision processing should be investigated. This very probably would take a different form from that on the OIS (Because the implemenation is so different); e.g., it might take the form of a BASIC user-exit.

The entire functionality and approach of the new OIS (the 240, 245, or Alliance system) should be evaluated, and a decision made whether, how, and to what extent the 2200 should emulate that.

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Editor

The functions described will follow as closely as possible those of the OIS/WP. These include:

- Global Hyphenation
- Repagination
- Document Marking
- Case-insensitive Search
- Expand DELETE, COPY, MOVE, REPLACE, SUPER COPY and SUPER MOVE

Global Hyphenation

This feature allows the operator to hyphenate long words at the end of a line to provide for more even right-hand margins or for less space between words when printing with justification. This is an interactive function in that the operator must decide whenever a hyphenate situation arises.

The operator enters this function by first positioning the cursor to the desired starting point in the text. Touch the COMMAND key. When the prompt "Which Command?" appears touch the Hyphen Key (-) for Global Hyphenation.

The prompt "Zone Length:" will appear. The "zone" is the number of blank spaces on any line between the last character and the right-hand margin. The operator enters the smallest zone length to be considered for hyphenation. The minumum allowed is three (3) and the maximum is ninety-nine (99). Touch EXECUTE to initiate search for "zone".

The system goes through the document searching for a "zone" which is greater than or equal to the zone length specified. When one is found the portion of the next word that will fit in the "zone" is highlighted and the prompt "Hyphenate?" appears. The operator will have several options at this point:

- Touch EXECUTE or Hyphen (-) to insert a hyphen before the current cursor position and search for another "zone".
- Touch BACKSPACE, East or West Cursor to move the cursor to where the operator wants the hyphen. Then EXECUTE or Hyphen (-).
- Touch SEARCH to skip over and make no changes to the current word and search for the next "zone". If the operator wishes to exit Global Hyphenation during the search for the next "zone", touching CANCEL will terminate Global Hyphenation. All hyphens inserted to this point will remain.
- Touch CANCEL to terminate Global Hyphenation. All hyphens inserted to this point will remain.

The system inserts a hyphen followed by a space (-) during Global Hyphenation. This enables the system to distinguish between a hyphen at the end of a line and a "required" hyphen (i.e., mother-in-law). When in Global Hyphenation the system removes all "old" hyphen-spaces as they are encountered. Global Hyphenation automatically terminates when it reaches the end of the document.

Repagination

Repagination allows the operator to automatically reset all the page breaks in logical places - without breaking paragraphs. This is an automatic function in that the system goes through the document deleting and inserting page breaks at positions that are specified by the operator.

The operator enters this function by first positioning the cursor to the desired starting point in the text. Touch the COMMAND key. When the prompt "Which Command?" appears touch the PAGE Key for Repagination.

The prompt "Page Length:" will appear. Key in the desired number of lines and key EXECUTE. The minimum is one (1) and the maximum is nine hundred and ninety-nine (999)

The system goes through the document, deleting all "standard" page breaks ("required" page breaks (Center-Page Break) are not deleted), and inserting page breaks after the last Return character which precedes the "Page Length" specified earlier. If the operator wishes to exit Repagination, touching CANCEL will terminate Repagination. All page breaks inserted to this point will remain.

If a particular page break is not appropriate the operator has the option of changing its location using the editor functions (DELETE, INSERT and/or MOVE) once control has been returned to the editor.

If a page becomes full before the specified number of lines has been reached, the page is saved with as many full lines as possible fitting on the page. From here, processing will continue as normal.

If the last line on the page, according to the line count, is not the end of a paragraph (i.e., has no RETURN character at the end), then the program will back track up to five lines in order to break the page at a proper paragraph. If a RETURN character is not found within these five lines then the page will be broken at the orginally determined location.

Document Marking

Document Marking is a function using the instruction COMMAND, NOTE which allows the operator to mark the cursor's current page, line and position in a document and later return to that location using the instruction GO TO PAGE, NOTE. Only one (1) location can be marked. The cursor will return to the last position marked. The location is lost once the operator leaves the editor via CANCEL, EXECUTE. If text containing the marked location is deleted the system will put the cursor as close to the marked position as it can.

To mark a location the operator performs the following steps:

- Position the cursor to the point to be marked.
- Touch COMMAND, NOTE.

To return to the marked location:

- Touch GO TO PAGE, NOTE.

Case-insensitive Search

This feature allows the operator to search through a document for a character or a sequense of characters regardless of the case. Cases include, for the standard keyboard, upper case, lower case or underlined.

This feature will be incorporated in the SEARCH function for a sequence of characters and in the DELETE, COPY, MOVE, REPLACE, SUPER COPY and SUPER MOVE functions for single characters.

In order to invoke a case-insensitive search the operator must key in the lower case of the character(s) to be searched.

Expand limits of DELETE, COPY, MOVE, REPLACE, SUPER COPY and SUPER MOVE

DELETE, COPY, MOVE, SUPER COPY and SUPER MOVE only allow the operator to perform the function up to and including the Page Break character. REPLACE does not allow the operator to include the Page Break character. We will extend this to go beyond Page Breaks.

Print

The print function of release 2.0 of 2200 word processing will be enhanced to look and act more like the existing WP systems on the OIS/VS product lines. Print will support both foreground and background print requests. The existing foreground execution of print will be changed to allow for enhanced operation.

When an operator chooses Print Document from the main menu, a prompt for document ID appears on the screen. Along with this prompt will appear an option selection field with the two options:

(1) Immediate Print - This print request will take place in foreground, which means the terminal requesting the print is unavailable until the print is finished. This method has already been implemented in Release 1.0 and will remain pretty much the same.

(2) Queue Print Request - This print request will cause the document that is requested to be entered in a print queue for printing at a later time.

The following screen will be displayed when Print Document is selected from the main menu :

```
--------------------------------------------------------------------------------
                        WANG 2200 Word Processing System

Please select next activity                                        07/04/81

                              - Edit Old Document
                              - Create New Document
                              # Print Document
                              - Document Index
                              - Document Filing
                              - Utilities
                              - Glossary Functions

Please Enter Document ID: 9999X                  # Immediate Print
                                                 - Queue Print Request
--------------------------------------------------------------------------------
```

Once the Document ID is entered by the operator, the option of printing immediately or queueing the print request must be selected.

If the operator selects Immediate Print, the print options screen is displayed. After all this information is provided, print occurs immediately in the foreground partition of the requesting terminal as it does for Release 1.0.

If the operator selects Queue Print Request, the document requested is submitted to a queue file along with all of the print options selected from the print option screen. Once the entry has been put in the queue, the main menu is redisplayed and control is returned to the operator.

Print operation without a queue - Immediate Print

The user initiates a print request in the same manner as in release 1.0, the user selects the Print function of the main menu of WP and modifies the appropriate print options.

If the user has selected either print to CRT or CRT IMAGE, the screen interaction will behave the same as in release 1.0. The program will:

(1) Print a screen of information,

(2) Print the a prompt telling the user what page the print just finished, the document ID, and the list of keys available,

(3) Wait for further action by the user. The choices available to the user will be :

- Press EXECUTE to continue sequentially to the end of the document or
- Press CANCEL to exit or
- Press GOTO PAGE. The prompt "Restart at Page: " will appear. The user has several options at this point:
  - Entering "999" or some number greater than the number of pages in the document will advance the print request to the last page in the document for review by the user.
  - Pressing CANCEL will bring the user back to the prompt waiting for EXECUTE, CANCEL, or GOTO PAGE.
  - Pressing EXECUTE or entering 3 digits will go to the page specified.
  - Pressing BACKSPACE will allow the user to modify the page number entered.

If the user has selected the character or line printer as the output device, then screen #1, shown at the end of this section, will be displayed. The box at the top of the screen will show the current line being printed on the printer. This allows the user to make sure that the document is printing and to get some idea of how far along it is in the print process.

The user also has two options available to modify the print request:

(1) Pressing GOTO PAGE will bring up the prompt "Restart at Page : " and the user will have the same options as given on the CRT output screen to restart printing at a specified page within the document.

(2) Pressing CANCEL will exit the user from the print program.

Print operation with a queue - Queue Print Request

Background print will operate much like the OIS/VS counterpart. The user will be able to select the next document to be printed, CANCEL print requests, and be able to RESTART printing at a specific page. The OIS handles RESTART automatically when the system determines that an error has occurred. The 2200 will RESTART only upon specific action by the user to do so. This offers increased control over the system by the user.

The user initiates print requests with a queue in the same way as without a queue. After selecting the Print Document function from the main menu a prompt appears requesting the Document ID of the document to print and the option to queue the print or print immediately.

The user may not queue any entries which direct their main output to the CRT (this includes the CRT IMAGE) or any printing of documents from an archive. If 'Queue Print Request' is selected for Print Document option, the 'CRT Only' option of the print options screen will not be available.

For this type of request, it will not be neccesary for a print task to be running at the time that the request is made. Entries may be put in the queue at any time. If a print task is running, the entries will be printed by that task.

If a background print task is not running, the print task may be initialized using the Special Print Functions - Initialize Print Queue function so that the queued documents may begin printing.

Once the queue monitor is running the user will have the option to $RELEASE the queue monitor to run in background while the user works in another partition or the queue monitor may remain in the user's current partition.

The print program will be smart enough to recognize whether the queue monitor is currently attached to a terminal in foreground or not. If the monitor is $RELEASE'd to a background task no further printing to the CRT will occur. If the queue monitor is attached to a foreground partition the print program will recognize this, present screen #2, activate those keys available and start printing the current line being sent to the printer onto the CRT.

Screen #2 works the same way that screen #1 for printing to a character or line printer works without a queue. The box at the top of the screen shows the user the current line which is being printed on the printer and the following keys are activated:

Pressing GOTO PAGE will bring up the prompt "Restart at Page:" and the user will have the same options.

Pressing CANCEL will stop printing the current print request, prompt the user to retain the print request in the queue, and then continue with the next entry in the queue.

Pressing STOP will stop printing the current print request, prompt the user to retain the print request in the queue, and ask the user to continue and print the next entry in the queue or stop execution and return to the main menu.

Pressing MOVE will move the print task to background and attach the user to the nearest available partition. This is useful if the user is running the queue in foreground and needs to run another program or if some user mistakenly attaches a running queue monitor to their partition. (There may be a convention for the user to select a partition from those available).

Screen #1

```
PRINT LIBRARY DOCUMENT

! This is the current line being sent to the printer.  NOTICE not the entir !

Document ID : 9999X          Current Page : 999

Press   GOTO PAGE to restart printing from a specific page
        CANCEL    to stop printing this request
```

Screen #2

```
PRINT LIBRARY DOCUMENT

! This is the current line being sent to the printer.  NOTICE not the entir !

Document ID : 9999X          Current Page : 999

Press   GOTO PAGE to restart printing from a specific page
        CANCEL    to stop printing this request
        STOP      to stop printing all requests
        MOVE      to move print task to background
```

Cancel Print Request

This facility allows a print request to be cancelled. If the Document is not being printed and exists in the queue, it is removed from the queue.

If the document is being printed, its status in the queue is changed from 'R' to 'C'. A message is then sent to the partition printing it. The task in that partition then reads the queue entry, sees the change in status to cancel and stops printing.

Select Next Print

This facility will have the ability to move an entry in the queue in position to be the next document to be printed. The Document ID will be requested from the operator and the system will modify the queue.

Merge Print Document

Merge print is a Special Print function which allows a user to print two previously created documents (with merge codes) as one finished document. The two documents are:

(1) A primary document. Usually a standard letter or form with merge codes typed wherever varying information is to be inserted.

(2) A secondary document. Usually a lengthy 'file' of names, addresses, etc. along with other varying information to be inserted in to the primary document. Merge codes follow each piece of information.

Merge Print operates by printing the information contained in the primary document in much the same way as a normal print except when a merge code is detected in the primary document. At this point the facility will then read the next string of data, delimited by a merge code, from the secondary document, print that string of data and continue printing the primary document.

Upon selecting Merge Print from the Special Print Functions menu the following screen will appear:

M E R G E P R I N T

Press EXECUTE to Continue
Please answer all questions

Primary Document ID : #####
Secondary Document ID : #####

Test Option :
Merge all sets
- Merge first two sets

(Any error messages)

The user must now enter the primary document ID and the secondary document ID. The test option is available to try out the first two sets of data in the secondary document before attempting to merge print all of the sets. This option should quickly show any inconsistencies or obvious errors in the formation of either the primary or secondary document.

Once the user has entered the primary and secondary documents and they have been verified by the system, a screen similar to regular print options screen will appear. The only difference being that both document ID's and document names will appear on the screen. The print options selected will be maintained for the primary document for future recall.

Print Document Index

A Print Index facility will be available on the Special Print Functions Menu. When selected, the operator will recieve the same screen previously shown for Document Index. The options for certain selections and sorts will be available.

If the operator chooses archive, then he will have to enter that particular archive ID. Selections and sorts can then be specified.

A mount archive message will appear. Then the archive name will be displayed for the operator to confirm. Once EXECUTE is pressed, a print summary screen will be displayed. This screen will be a modified version of the print summary screen used for Print Document since all of the parameters used for Print Document will not be neccesary for Print Index. The print of an archive index will take place in immediate mode using the foreground partition of the requesting terminal. CANCEL may be used at any time thereafter to stop printing the index. Archive index requests may not be queued since the archive diskette may or may not be mounted by the time the print queue starts to print the index.

If the operator chooses library, he may specify a single library or request the whole system by leaving the library name blank. Selections and sorts can then be specified. When all selections are made, the print summary screen mentioned above will be displayed. One difference for this screen is that there will be an option selection field with two choices: Immediate Print or Queue Print Request, as previously explained.

The format of the printed output will be a standard listing of the document summary information which is diaplayed for Document Index. If the request for system libraries or the complete system is queued, the entry can be entered in the queue with entry name 'INDEX'.

The screen below is the print summary screen for Print Index.

P R I N T I N D E X

Please answer all questions

Printer Number 02 Left Margin 010

FORMS	MODE
# Continuous	# Immediate Print
- Single	- Queue Print Request
- Form 1	
- Form 2	

Cancel Print Index

Cancel Print Index will also be on the Special Print Functions Menu. This will be most useful when the request has been queued to be printed at a later time and it is desired to remove the request from the queue.

Initialize Print Queue

If the operator chooses to start a print task, the option of running the print task in foreground or background will be given if the requesting terminal has more than one partition. Otherwise, it will be neccesary to run it in foreground.

Once it is determined where the print task will be run, the operator will be asked to enter a list of devices that is accessible for this print task. In this case, the devices are printer addresses. This allows a terminal to directly attach itself to a printer for a period of time if a print task is not running or a print task that is running does not have access rights to certain printers.

For example, each monitor program will have a list of printers it is allowed to access. If an operator wishes to attach itself to a printer, then entries can be queued to a printer that is inaccessible to any of the print tasks currently running. Then once all entries are submitted to the queue, a print task can be run with a specific printer defined for its use and only queue entries submitted for that printer will be processed. This allows a number of documents to be queued and printed one after another on the same printer while other entries in the queue are ignored or printed to another printer by a different print task.

Document Index

Release 2.0 of Document Index is a WP function that will allow the operator to select sorts also by Author, Operator, Title, or Comment. Also, there will be an added option in the 'Which Ones' column to display only active documents, i.e., documents that can still be edited and are not just skeletons of documents that have been archived.

The screen display shown below will replace the screen displayed on Release 1.0 of Document Index when selected from the main menu:

D O C U M E N T I N D E X

Please choose one from each column

Location	Which Ones	Author/Operator/Title/Comment
# Library P	- All	
- Archive t	# By Author	----------
	- By Operator	
	- By Title	
	- By Comment	
	- In Use	
	- Recovered	
Sort Order	- Active	
# By Document ID		
- By Author		
- By Operator		
- By Title		
- By Comment		

When this screen is displayed, the operator is first required to choose whether to display an index from a library or an archive. Then the library or archive ID should be entered. This selection field defaults to Library.

The next step for the operator to perform is to select an option from the 'Which Ones' column. The choices work as follows:

All	Every document in the library or archive is displayed.
Author, Operator, Title, or Comment	The approriate name or comment should be entered in the text entry field for these options. For example, if all documents in library 'A' written by author John Doe are desired, then the library option with library name 'A' should be entered. The Author option should be specified in the 'Which Ones' option selection field with the name 'John Doe' entered in the text entry field.
In Use	Only documents that have a current status of being used will be displayed.
Recovered	Only those documents that were recovered will be displayed.
Active	Only documents that have not been archived and are complete documents will be displayed. A complete document is a document that has text. Archived documents contain only information about the document such as name, author, etc. There is no text for this document on the system.

The default option for this selection is 'All".

The last option selection field allows the operator to specify a sort order. Here the operator has the choice of displaying the documents found in order by Document ID, Author, Operator, Title, or Comment. This selection defaults to sort by Document ID.

Advanced Filing

Advanced filing is similar to document filing, except the former allows the user to do some extra things while doing document filing. Those things include:

Copy to Archive with Rename
File to Archive with Rename
File and Keep Summary
Retrieve from Archive with Rename
Copy Document between Libraries
Move Document between Libraries

Selected from the WP Supervisory Functions Menu, the user will get the following menu screen for Advanced Filing:

ADVANCED FILING

Please select filing option

Copy to Archive with Rename
- File to Archive with Rename
- File and Keep Summary
- Retrieve from Archive with Rename
- Copy Document between Libraries
- Move Document between Libraries

Archive Location: _

This menu will remain on the screen throughout all the procedures of advanced filing, the selected option will be highlighted, and the messages and other prompts will be displayed below the menu during the process. The procedures of each option are described separately on the folllowing pages.

Copy to Archive with Rename

This function allows the user to copy a document to archive in much the same way as in document filing, except it gives the user an option to rename the document on the archive. First, the user enters archive location and document ID. Then the messages will display on the bottom of the screen in the following order

Document Name: A Letter to John Smith

Execute or Cancel

Execute

Mount Archive

Execute or Cancel

Execute

Archive : 0020A

Execute or Cancel

The system will then ask the user to enter a new Document ID (or the original Document ID). After the user enters 'Execute' the screen below will be obtained.

ADVANCED FILING

Please select filing option

Copy to Archive with Rename
- File to Archive with Rename
- File and Keep Summary
- Retrieve from Archive with Rename
- Copy Document between Libraries
- Move Document between Libraries

Archive Location: J

Please enter document ID: 2222A
Enter new document ID: 3333B

Document Name: A Letter to John Smith
Archive : 0089Y
(In Progress)

The document will be copied normally except that the archive document's ID will be different from the document ID of the system document it was copied from. In this case system document 2222A will be copied to archive with a new ID, 3333B. If document 3333B already exists on the archive, the user will have a choice to execute (overwrite) or cancel copy (re-enter a new Document ID). In this case the message is "Document already exists, Execute or Cancel".

File to Archive with Rename

This function allows the user to file a document to archive in much the same way as in document filing, except it gives the user an option to rename the document on the archive. The messages on the screens and procedures are the same as Copy to Archive with Rename. The document will be filed normally except that the archive document's ID will be different from the document ID of the system document it was filed from.

If document 3333B already exists on the archive, the user will have a choice to execute (overwrite) or cancel filing (re-enter a new Document ID).

File to Archive and Keep Summary

This function allows the user to file a document to archive and leave a 'skeleton' of the document in the WP library. The skeleton would contain a document summary and a minimum text stating "This is only the summary of document". A skeleton document cannot be filed. Only the document summary page of a document can be printed. The skeleton may also be deleted from the library it is contained in. If the user wishes to retrieve the actual document from archive, the skeleton document will be deleted automatically by the system in the process before retrieving.

Retrieve Document with Rename

This function allows the user to retrieve a document from archive in much the same way as in document retrieving, except it gives the user an option to rename the document on the system. First, the user enters archive location and archive label. The messages will then be displayed on the the screen after each execution is entered, in the following order:

Please enter Document ID: 1234A

Execute or Cancel

Execute

Mount Archive

Execute or Cancel

Execute

Document name: A Letter to John Smith

Execute or Cancel

Then the system will ask the user to enter a new Document ID, (or the original Document ID). The user can enter a specific ID or use the NEXT convention. Using the next convention, the user would enter something like 'NEXTB', where B is the destination library. The system will generate the next available document ID in that library and display it to the user before continuing. The message will be:

Document's new ID: 00638

Execute or Cancel

After the user agrees with the new document ID, the user will obtain the following screen:

```
ADVANCED FILING

Please select filing option

        - Copy to Archive with Rename
        - File to Archive with Rename
        - File and Keep Summary
        # Retrieve from Archive with Rename
        - Copy Document between Libraries
        - Move Document between Libraries          Archive Location: J

      Please enter document ID: 2222A
         Enter new document ID: NEXTB
             Document's new ID: 0063B

Document name: A letter to John Smith
Archive : 0089Y
(in progress)
```

The document will be retrieved normally except that the system document's ID will be different from the document ID of the archive document it was retrieved from. For example, document 2222B exists on the archive. The user may retrieve document 2222B as document 3333A by specifying a new document ID. If document 3333A already exists in the system library, the message will be "Document already exists, Please cancel". If the library is not defined, the message will be "Unknown library, Please cancel".

Copy Document Between Libraries

This function allows the user to copy a document from one WP library to another. First the user is prompted for the ID of the document to be copied, then the user is prompted for the destination ID. The destination document ID can be a specific ID or the user may specify the NEXT convention. Using the NEXT convention the user would enter something like 'NEXTY', where Y is the destination library. The system will generate the next available document ID in that library and display it to the user before continuing. The screen will be:

ADVANCED FILING

Please select filing option

- Copy to Archive with Rename
- File to Archive with Rename
- File and Keep Summary
- Retrieve from Archive with Rename
\# Copy Document between Libraries
- Move Document between Libraries

Archive Location: J

Please enter document ID: 1234A
Please rename it: NEXTY
Document new ID: 0035Y

Document name: A Letter to John Smith
(in progress)

Once the process is completed, both the original document and the new copy of the document in the destination library will exist and will be equivalent. If the user specified destination ID already exists or the user specified library is not defined, the user will be forced to cancel copy.

Move Document Between Libraries

This function allows user to move a document from one WP libray to another. The screens and procedures are the same as Copy Document Between Libraries. The only difference is, once the process is completed, the original document will not exist in the original library. The document will exist in the destination library specified and have the new ID.

Document Merge

Document Merge is a facility that allows the operator to create a new document or documents by merging text that is located in two different documents. The typical application is in the creation of multiple copies of a form letter, with different salutations and addresses for different recipients. It differs from the usual merge print in that the output is not a printed document, but rather a stored document, which can be edited, printed, archived, or sent by TC.

Document Merge on the 2200 will operate similarly to the corresponding OIS utility, but it will have a few additional options for its use. The operator will be asked to specify the ID of two documents, one of which will be the primary document (the "form letter"), a creation library for the output document(s), an output option, and a merge option. The following screen is used for entering the options and document ID's for Document Merge:

```
                        D O C U M E N T   M E R G E

Press EXECUTE to Continue
Please answer all questions

                        Primary Document ID :    #####
                        Secondary Document ID :  #####

                        Creation Library :       #

Test Option:              Output Option:          Merge Option:
# Merge all sets          # All in one document   # by Sequence
- Merge first two sets    - Separate documents    - by Field Number
                                                  - by Field Name
```

The merge program assumes that the primary document is a standard form into which variable data or text will be inserted - that data is taken from the second document. The second document may contain enough text to be merged into one or more copies of the primary document; if enough text exists for more than one copy, we will refer to sets of text or data in the secondary document. The document(s) resulting from the merge process are new document(s) created in the specified creation library; they will be assigned document ID's exactly as with the usual create document process. The output option determines whether one or many documents are created - all "copies" or versions of the primary document can be put into the same document, or each "copy" may be an entirely new document.

The rules by which the merge takes place are determined by the merge option - three choices are allowed: merge by sequence of text, merge by field number, or merge by field name. Merge by sequence of text will definitely be available in Release 2.0; merge by field number and merge by field name may or may not be available, depending upon how well List Processing takes care of these options.

When merge by sequence of text is chosen, the procedures are like those on the WP and OIS systems. The first text item (per set) in the secondary document replaces the first merge graphic in the primary document; the second text item replaces the second merge graphic, and so on. The Merge Safeguard (Don't Merge) character will continue to have it's usual meanings.

When merge by field number is chosen, merge will assign an implicit field number to each field in a set in the secondary document; this field number does not have to be explicitly typed into the secondary document, it will be assigned sequentially within a set by the Merge program. Each merge graphic in the primary document must be expanded to consist of the sequence MERGE, NOTE, the field number, NOTE; this is similar to the convention used by Auto-Merge Print in the OIS List Processing package. The occurrences of this sequence in the primary document do not need to be in the same order as the occurrence of the fields in the sets of data in the secondary document. Also, any given field may be used any number of times (including no times, i.e. not used) in the primary document. This makes it practical to use the same secondary document for several primary documents. Because the correspondence between fields in the primary and secondary document is not as close, we will require the Merge Safeguard (Don't Merge) to separate sets of data in the secondary document.

When merge by field name is chosen, the operation will be almost identical to the OIS Auto-Merge Print in List Processing, except that the data will come from a secondary document instead of a data file. The primary document must contain merge indicators consisting of the sequence MERGE, NOTE, field name, NOTE. In the secondary document, individual fields will be preceded by the same sequence (MERGE, NOTE, field name, NOTE) - this serves as the definition of field names. When the merge operation takes place, the merge indicators in the primary document will be replaced by the value of the corresponding field in the current set of data in the secondary document. As with merge by field number, any field may be used in the primary document any number of times (including not used at all), and in any order. Also, as with merge by field number, we will require a Merge Safeguard as a separator between sets of data in the secondary document. A Merge Safeguard at the very beginning of the secondary document or the very end will be optional.

Once all options have been entered and the primary and secondary documents have been verified the following progress screen will appear for the duration of the merge process:

D O C U M E N T M E R G E

Press CANCEL at any time

Primary Document ID: 0030A
Secondary Document ID: 0035A

Creation Library: A
Creating Document: 0036A

Number of Pages written: 1

(Various Progress Messages)

Once all of the sets specified have been processed, the system will wait for user acknowledgement and then return to the appropriate menu.

At this point the documents which have been created by the Document Merge will be availiable to the user.

Keyword Entry and Search

Keyword Entry and Search is a 2200 Word Processing facility that allows documents to contain keywords that can be used to find documents.

The Keyword Entry and Search system will consist of two major parts:
(1) Keyword Entry for documents and
(2) Keyword Search for documents.

Keyword Entry

When an operator either creates or edits a document from the main menu, the next screen that will appear is the Document Summary screen. The operator can then fill in the document summary information and keywords.

The screen shown below is the document summary screen which will accept keywords:

D O C U M E N T S U M M A R Y

Document ID: 9999X
Document Name: _____
Operator: _____
Author: _____
Comments: _____

Key Words:
_____
_____

STATISTICS

OPERATION	DATE	TIME	WORKTIME	KEYSTROKES
Created	00/00/00		00:00	0000:00
Last Revised	/ /		00:00	0000:00
Last Printed	/ /		00:00	
Last Archived	/ /		00:00	onto Archive
Total Pages			0	Total Worktime 0000:00
Total Lines				Total Keystrokes

Entry of keywords will be optional. Once entered, all keywords will be stored on the 'extra page' which will be created when keywords are used.

The entering of keywords will be free form. There are two text entry fields of 75 bytes each available for entering keywords. This enables multiple keywords to be used as a single keyword. A delimiter, a colon, will be used between separate keywords. The number of keywords will depend on their individual sizes. The two text entry fields will be considered one long field. The second text entry field should not be considered the start of another keyword unless the last character typed in the first field is a colon.

Keyword Search

This part of the system will be similar to Document Index. It will be capable of displaying documents from one to six libraries. When selected from the Utilities Menu, the screen shown below will be displayed:

K E Y W O R D S E A R C H

Please choose one from each column

Location	Which Ones	Author/Operator/Title/Comment
Library(s) A _ _ _ _ _ _	# All - By Author - By Operator - By Title - By Comment - In Use - Recovered - Active	_____

Key Words:

Find Documents Containing

Any Keyword
- All Keywords

The operator will be required to select from 1 to 6 libraries in which he would like to search. Once the library(s) is chosen, there will be a 'Which Ones' column that will allow the operator to select specific documents from a library. The choices will be All, Author, Operator, Title, Comment, In Use, Recovered, and Active documents. The choices work as follows:

All	Every document in the library or archive is displayed.
Author, Operator, Title, or Comment	The approriate name or comment should be entered in the text entry field for these options. For example, if all documents in library 'A' written by author John Doe are desired, then the library option with library name 'A' should be entered. The Author option should then be specified in the 'Which Ones' option selection field with the name 'John Doe' entered in the text entry field.
In Use	Only documents that have a current status of being used will be displayed.
Recovered	Only those documents that were recovered will be displayed.
Active	Only documents that have not been archived and are complete documents will be displayed. A complete document is a document that has text. Archived documents contain only information about the document such as name, author, etc. There is no text for this document on the system.

The default option for this selection is 'All".

At this point, keywords can be typed in the two lines of text entry fields. If more than one keyword is used, a colon, ':', should be used to separate keywords. Once entered, the operator must select whether documents containing all keywords or any one of them is desired. If Any Keyword is selected, all documents that have any one of the specified keywords are displayed. If All Keywords is selected, then only documents with the keywords specified are displayed.

General Introduction

The document access subroutines are packed in four modules: 609DOCUM, 609CPAGE, 609ADMIN, and 609GLOSS. These subroutines are all independent and located in separate line numbers. Depending on the requirements, the user can selectively choose one or any combinations of the subroutines at a time.

At the beginning of each of the above four modules, there exists a list of variable declarations and the lower level subroutines shared by all the subroutines within that module. The user can select those modules needed and only have the lower level routines appear once in the execution set that is built.

The user can open up to four documents at a time. There are four slots (1-4) to choose as slot number. The user assigns a slot number to the document whenever he or she opens the document. The slot number stays the same as long as the document remains opened. All documents will be opened in exclusive mode. Only one glossary is allowed to be attached at a time, and the glossary will be opened in shared mode. Since the attached glossary will take one of the four slots, the user needs to assign a slot number to it also. Every file (including glossaries) that is opened must be closed.

Basically, 609DOCUM is a document related module, which contains the subroutines to open, close, create, delete a document. 609CPAGE is a page related module, which contains the subroutines to manipulate the text pages, such as go to page, read a page, write a page, insert or delete a page. 609ADMIN is a document summary related module, which has the subroutines to read or write the admin page as well as the print information. 609GLOSS is a glossary related module, which has the subroutines to attach, call or detach a glossary.

Note that the page 609CPAGE or 609GLOSS is dealing with is only the variable, J$(). In another words, whenever a 'read page' subroutine is called, the contents of the page will be put into J$(). Whenever a 'write page' subroutine is called the contents in the variable J$() will be written into that page. Whenever a glossary entry is called, the glossary entry will be put into J$() also. The user has to be aware of the contents in variable J$(), especially when dealing with more than one document.

The following table lists the contents in each module and the subroutine names:

Module Name	Subroutine function	DEFFN' Assignment
I. 609DOCUM	Initial Data	109
	Open Document	110
	Close Document	111
	Create Document	112
	Delete Document	113
	Change Password	114
II. 609CPAGE	Go To Page	119
	Read Page	120
	Rewrite Page	121
	Insert Page	122
	Delete Page	123
	Append Page	124
	Search text	125
III. 609ADMIN	Read Admin	130
	Write Admin	131
	Queue print request	*
IV. 609GLOSS	Attach Glossary	137
	Call Glossary	138
	Detach Glossary	139

* May not be available in first issue of Release 2.0

ERROR CODES

Hex Error Code	Description
A1	Page table full
A2	Last page cannot be deleted
A3	Page does not exist
A4	File already opened, or Gloss already attached
A5	Illegal file name
A6	Library map not found on the selected disk
A7	Library has not been established
A8	Illegal page number
A9	Prototype doesn't exist
B0	Prototype not accessible
B1	Glossary not attached
B2	Glossary not verified
B3	Glossary index exceeds one sector
B4	Glossary entry not found
B5	Wrong numeric type for admin
01 thru 29	WPFM error code (see next page)

Numeric Error Code	Description
80 thru 89	Disk errors (refer to BASIC-2 manual)
90 thru 99	I/O errors (refer to BASIC-2 manual)
** HEX(00)	Normal, successful return

WPFM Error Codes

Hex Error Code	Description
01	Volume Full
02	File or Volume already exists
03	File or Volume does not exist
04	No free device slots
05	Incorrect password
06	Open access type error
07	File not open
08	Illegal File ID
09	Not enough room in file (to reuse scratched file).
10	File mess up
20	EOF reached unexpected (fatal)
22	Destination VAU not valid
23	Buffer variables not valid
24	No VAU's in file
25	Source & VAU # inconsistent
26	Volume init parameter inconsistent
27	Byte parameter error in replace
28	EOF reached normal (not fatal)
29	Data transfer with greater than 128 VAU's

(I.1) Initialize Data

DEFFN'109

INPUT: none

OUTPUT: none

To start document accessing, the user has to load WPFM and the selected document access subroutines, then call subroutine '109 to initialize data and dimension the variables that are used by the system.

(I.2) Open Document (exclusive mode)

DEFFN'110 (R5$, A6$, B9)

INPUT: R5$ = Document ID
A6$ = Document password
B9 = User defined slot number (1-4)

OUTPUT: B1$ = Return code

The document will be opened in exclusive mode. Up to four documents can be opened at a time. User assigned slot number will stay with the document unchanged, so long as the document stays open. If a document is already opened at that slot, the file will be left open, and a return code HEX(A4) will be obtained.

(I.3) Close document

DEFFN '111(B9)

INPUT: B9 = User defined slot number (1-4)
B9 = 0 means close all opened documents

OUTPUT: B1$ = Return code

This will close the document being opened by the assigned slot number. If the number belongs to an attached glossary, it will detach the glossary. HEX(07) will be returned, if no document by that number is opened.

If B0=0, the subroutine will close all the currently opened documents, including the attached glossary.

(I.4) Create Document

```
DEFFN'113 (R5$, A6$, B9)

INPUT:   R5$ = Document ID or "NEXTa" (where "a" represents the library)
         A6$ = Document password
         B9  = User defined slot number (1-4)

OUTPUT:  R5$ = Document ID created
         B1$ = Return code
```

This subroutine will create a new document with only one page, which contains the same initial format as its prototype document. The variable R5$ should either be a specific document ID or in the "NEXTa" format, which means the next available document ID in library "a".

After a successful creation, the document will stay open in exclusive mode, with the user assigned slot number, and R5$ will contain the document ID of this newly created document.

(I.5) Delete Document

```
DEFFN'114 (B9)

INPUT:   B9  = User defined slot number (1-4)

OUTPUT:  B1$ = Return code
```

File has to be opened in exclusive mode before delete.

(I.6) Change Password

```
DEFFN'132 (A6$, B9)

INPUT:   A6$ = new password
         B9  = User defined slot number (1-4)

OUTPUT:  B1$ = Return code
```

File has to be opened in exclusive mode before changing password.

(II.1) Go To Page

```
DEFFN'119 (A7, B9)

INPUT:    A7  = page number
          B9  = User defined slot number (1-4)

OUTPUT:   A7  = page number
          B1$ = Return code
```

This subroutine operates in the same way as it would in the editor, except that the page is not read by this subroutine. When going to an actual page number, the current page marker will be positioned to the appropriate page. For example, (-GOTO-PAGE-) (-999-) will set the current page marker to the last page of the document, and the variable A7 will have the number of the last page. The only exception is, the Footer, Header, and Work page will be numbered -3, -2, and -1, respectively.

File has to be opened before setting the page marker.

(II.2) Read Current Page

```
DEFFN'120 (B9)

INPUT:    B9  = User defined slot number (1-4)

OUTPUT:   B1$ = Return code
```

The current page marker has to be assigned by go-to-page before calling this subroutine. The contents of the current page of the document in slot number B9 will be returned in the variable J$(). This function will not alter the current page marker.

(II.3) Rewrite/Replace Page

```
DEFFN'121 (B9)

INPUT:    B9  = User defined slot number (1-4)

OUTPUT:   B1$ = Return code
```

The current page marker has to be assigned by go-to-page before calling this subroutine. The contents of the variable J$() will replace the contents of the current page of the document in slot number B9. The buffer will not be verified as to its correctness. The current page marker will remain unchanged.

(II.4) Insert/Write New Page

DEFFN'122 (B9)

INPUT: B9 = User defined slot number (1-4)

OUTPUT: B1$ = Return code

The current page marker has to be assigned by go-to-page before calling this subroutine. The contents in the variable J$() will be inserted as a new page directly before the current page of the document in slot number B9. The buffer will not be verified as to its correctness. The current page marker will remain unchanged. For example, if the current page marker points to page 3, after inserting a new page, the current page marker will remain 3, the original page 3 will become page 4, and the newly inserted page will become page 3.

This function will only insert text pages. Any writings in the Footer, Header, and Working page have to use the Rewrite/Replace function. The system will allow a maximum of 116 text pages.

(II.5) Delete Current Page

DEFFN'123 (B9)

INPUT: B9 = User defined slot number (1-4)

OUTPUT: B1$ = Return code

The current page marker has to be assigned by go-to-page before calling this subroutine. This subroutine will allow the user to remove the current page from the document. The current page marker will remain unchanged. For example, if you delete page 3, page 4 now becomes page 3 and the current page marker would still be pointing to page 3.

The system will force the user to retain at least one regular text page in a document by not allowing the user to delete the last page.

(II.6) Append Page

DEFFN'124 (B9)

INPUT: B9 = User defined slot number (1-4)

OUTPUT: B1$ = Return code

This subroutine will allow the user to add the contents of the variable J$() as a new last page of the document in slot number B9. This buffer will not be verified as to its correctness. The new page will be added to the end of the document regardless of the current page marker. Upon return, the current page marker will point to this new last page.

The system will allow a maximum of 116 text pages.

(II.7) Search Text String

DEFFN'125 (B8$, B6)

INPUT: B8$ = The text string to search for
B6 = Offset in the current page

OUTPUT: B1 = The byte number where the string begins in the page
B1$ = Return code

The content of the page has to be put in the variable J$() before calling this subroutine. The search function will locate the first occurence of the string passed to the routine in J$() starting at a specific byte number in the page. If the string is found, the return variable, B1, will give the byte number where the string begins in the page. If the string is not found, then the return variable will be equal to zero.

This function will do a case insensitive search, in the same way the editor will work.

(III.1) Read Administrative Information

DEFFN'130 (B9)

INPUT: B9 = User defined slot number (1-4)

OUTPUT: B1$ = Return Code

This subroutine will return the current values of the adminstrative information block of the file (this is the information presented in the document summary) to the user in variables S$(), S1$(), and S(). This routine will also return the print defaults of the document (this is the information presented to the user on the print options screen) to the user in variables S2() and S3().

Alpha Array S$(4)25

S$(1)	name	25 bytes
S$(2)	operator	20 bytes
S$(3)	author	20 bytes
S$(4)	comments	20 bytes

Alpha Array S1$(13)6

S1$(1)	document ID	5 bytes	S1$(8)	print date	6 bytes
S1$(2)	creation date	6 bytes	S1$(9)	print time	4 bytes
S1$(3)	creation time	4 bytes	S1$(10)	archive date	6 bytes
S1$(4)	creation work	6 bytes	S1$(11)	archive time	4 bytes
S1$(5)	revision date	6 bytes	S1$(12)	archive ID	5 bytes
S1$(6)	revision time	4 bytes	S1$(13)	total worktime	4 bytes
S1$(7)	revision worktime	6 bytes			

Numeric Array S(5)

S(1)	Creation Keystrokes
S(2)	Revision Keystrokes
S(3)	Total Pages
S(4)	Total Lines
S(5)	Total Keystrokes

Numeric Array S2(11)

S2(1)	print from page	S2(7)	paper length
S2(2)	print through page	S2(8)	number of originals
S2(3)	starting as page	S2(9)	character set number
S2(4)	first header page	S2(10)	printer number
S2(5)	first footer page	S2(11)	left margin
S2(6)	footer begins on line		

Numeric Array S3(7) (number = number of option on print screen)

S3(1)	device	S3(5)	style
S3(2)	pitch	S3(6)	summary
S3(3)	format	S3(7)	delete
S3(4)	forms		

(III.2) Write Administrative Information

DEFFN'131 (B9)

INPUT: B9 = User defined slot number (1-4)

OUTPUT: B1$ = Return code

This subroutine updates the administrative information block and the print defaults of a WP document via the same variables used in the Read Administrative Information function.

(IV.1) Attach Glossary

DEFFN'137 (R5$, A6$, B9)

INPUT: R5$ = Glossary ID
A6$ = Glossary password
B9 = User defined slot number (1-4)

OUTPUT: B1$ = Return code

This subroutine attaches a glossary to the station for subsequent use in the modification of a WP document by the application program. The attaching of a glossary will open the glossary file for further use and therefore use up one of the 4 slots available for files.

Only one glossary may be attached at a time. Only text recall glossaries are allowed. Because the glossary file has to be open, it must be closed before the end of the current processing session.

(IV.2) Call Glossary

DEFFN'138 (A4$)

INPUT: A4$ = Glossary label

OUTPUT: B1$ = Return code

The glossary has to be attached before calling glossary text. This subroutine would look up the appropriate glossary entry by the glossary label. The glossary entry will be returned in the variable J$(). It is a similar in function to the Read Page Subroutine. It will be up to the user to do any actual insertion of this glossary text into the current page of a document.

(IV.3) Detach Glossary

DEFFN'139 (B9)

INPUT: B9 = User defined slot number

OUTPUT: B1$ = Return code

This subroutine will close the attached glossary and detach the glossary from the station. Note the attached glossary needs to be detached in order to close it.

2200/WP II ANNOUNCEMENT

Wang Laboratories is pleased to announce the availability of Release II of 2200/WP Word Processing Software to its network of software consultants and system houses. Release II adds several important features which will further enhance the software consultants/system houses' ability to compliment their data processing solution with the industry's leading word processing technology. Enclosed with this announcement is a product update which reviews the new features of 2200/WP in detail. It is important to emphasize that the 2200 series is still primarily a data processing system and 2200/WP should be marketed only as an additional application that can be performed on the system.

PRICING

2200/WP Release II is priced to offer attractive incremental revenues to the participating software consultants/system houses without a significant up front investment. 2200/WP Release II is now available to software consultants/system houses through an initial one-year vendor license fee and per installation sub-license fees to Wang Laboratories as follows:

1.	Initial vendor license fee	$ 300
2.	End-user sub-license fee	$ 500
3.	Documentation fee (per copy)	$ 35
4.	Annual vendor license renewal	$ 150
5.	Suggested end-user 2200/WP price	$2,000

The initial vendor license fee of $300 includes the right to sell and install the 2200 WP software for one year, a copy of 2200/WP on diskette, one set of 2200/WP system and user documentation, and maintenance releases for year. Upon installation of 2200/WP at each end-user site, the licensed vendor will submit to Wang Laboratories the $500 end-user sub-license fee along with required sub-license contract and end-user installation information (specific 2200/WP WP license, sub-license and payment procedures will be supplied upon purchase of the 2200/WP vendor license). The suggested end-user price of $2,000 will provide the vendor attractive compensation for end-user installation, training, and on-going support services.

Software consultants and system houses that have purchased the 2000/WP Release I $10,000 license which allows unlimited right to copy will be exempt from this pricing policy. Holders of these licenses will be updated with Release II free of charge and will continue to have unlimited right to copy. However, the Release I unlimited right to copy license will no longer be available for sale to software consultants and system houses effective with this announcement.

SUPPORT

1. The system and user documentation and the 2200/WP software provided to the vendor upon purchase of the 2200/WP license will be the major vehicle for vendor self-unstruction.

2. When 2200/WP is sold by a vendor, the vendor will assume responsibility for end-user installation, training and on-going support. Wang analyst consultation and assistance regarding applications designs, problem diagnosis, etc. may be billable to the vendor at the discretion of the Wang District and Branch Support Organization.

ORDERING INFORMATION

1. To order the 2200/WP Release II vendor license, Wang software consultants and system houses should contact the Software and Literature Control Center, 836 North Street, Tewksbury, MA 01876, 617-851-4111, Extension 4193.

2200 WORD PROCESSING SOFTWARE SYSTEM
RELEASE 2

PRODUCT UPDATE

The following product update details the enhanced functionality of Release 2 2200 WP:

Increased Editor Functionality

The following facilities will be added to the Editor in 2200/WP Release 2.

- Global Hyphenation - This feature allows the operator to hyphenate long words at the end of a line to facilitate for more even right-hand margins and less space between words when printing with justification. This feature requires operator involvement whenever a hyphenation decision arises.

- Global Repagination - Repagination allows the operator to automatically reset all the page breaks in logical places - without breaking paragraphs. This is an automatic function that enables the system to go through the document deleting and inserting page breaks at positions that are specified by the operator.

- Case Insensitive Search - This feature allows the operator to search through a document for a character or a sequence of characters regardless of the case. Case includes upper case, lower case or underlined.

- Expanded functionality of DELETE, COPY, MOVE, REPLACE, SUPER COPY, and SUPER MOVE. These functions will be expanded to go beyond page breaks.

- Entry and Storage of Keywords - Keyword Entry and Search is a 2200/WP facility that allows the Document Summary Page to contain keywords that can be used to find documents.

Added Printing Functionality

The following additional print functions will be provided:

- Background Printing and associated queue management functions. 2200/WP printing will support both foreground and background print request. When an operator chooses Print Document from the main menu, an option selection will appear with the option to (1) print immediately, this will take place in the foreground, or (2) Queue Print Request; this will cause the document that is requested to be entered in a print queue for printing at a later time.

  Backgroup print will operate much like the OIS/VS counterpart. The user will be able to select the next document to be printed, and CANCEL print requests. When printing in foreground, the operator will be able to RESTART printing at a specified page.

- Merge Print - Merge Print is a Special Print Function which allows the user to print two previously created documents (with merge codes) as one finished document. (Does not create a new document that can be edited).

- Print Document Index - When selected, the Print Index facility enables the operator to print the same information as displayed in the Document Index.

Advanced Functions:

1. Document Merge - Create a third document (merge of two input documents that can be edited and printed.)

2. Advanced Filing

   - Copy to Archive with Rename.
   - File to Archive with Rename.
   - Retrieve from Archive with Rename - These functions perform the same operation as their original functions, except they give the user the option to rename the document.

   - Copy Document between Libraries.
   - Move Document between Libraries - These functions allow the user to copy or move a document from one WP Library to another. The destination document ID can be a specific ID number or the next available ID number. Move Document will keep the original document.

   - File and Keep Summary - This function allows the user to file a document to archive and leave a "skeleton" of the document in the WP Library. The skeleton would contain a document admin. page, so that user can see the Document information from Document Index.

Document Access Subroutines

The Document Access subroutines are used by a programmer or analyst to interface Data Processing Applications to Word Processing. The table below is a summary of the subroutine functions.

Initialize Variables
Open Document
Close Document
Create Document
Delete Document
Change Document's Password

Goto to a page in Document
Read Page
Rewrite Page
Insert Page
Delete Page
Append Page
Search for Specific Text

Read Admin Information
Write Admin Information

Attach Glossary
Call Glossary
Detach Glossary

Detailed descriptions regarding implementation of these subroutines will be available in the 2200 Word Processing Programmers Guide.

Horizontal Scroll

Horizontal Scroll, which is included as part of the specifications for 2200/WP Release 2, will not be available in the initial distribution of the package. When Horizontal Scroll is available, it will not operate within a 28K partition.

2200/WP WILL NOT SUPPORT THE FOLLOWING FUNCTIONS:

Document Sort
Common keystroke glossaries
Paragraph Files
Calculator
Automatic Paragraph Numbering
Index Generator
Document Summary Collection
Column Edit
Multiple option on the Document Filing Screen

WANG

ECO

ECO NO. 25863

SHEET OF

ORIGINATOR	Paul Williamson	M/S	1469	EXT. 7491	DATE 03/01/83
WRITTEN BY	Jaye Staples-Langlois	M/S	1469	EXT. 6361	DATE 03/01/83

PART NO./ITEM NO. 195-2174-3/-5	TITLE 2200 WORD PROCESSING
DWG. NO./P. L. NO. N/A	
NEXT ASSY. EFFECTED Y (N)	TITLE
MODEL NO. 2200 VP/SVP/LVP/MVP	

DESCRIPTION OF CHANGE

THE FOLLOWING SOFTWARE PACKAGE AND ITS CONTENTS IS CERTIFIED BY QA FOR CUSTOMER RELEASE:

WLI#	CONTENTS	DESCRIPTION	VERSION NO.
195-2174-3		2200 Word Processing	02.1
	701-2736	WP1	
	701-2737	WP2	
	701-2738	WP3	
	701-2739	WP4	
	700-6937A	2200 Word Procesing Operator's Guide	
	700-6864A	2200 Word Processing Supervisors's Manual	
	700-6961	2200 Programmer's Guide to Word Processing	
195-2174-5		2200 Word Processing	02.1
	731-0067	WP1	
	731-0068	WP2	
	700-6937A	2200 Word Processing Operator's Guide	
	700-6864A	2200 Word Processing Supervisors's Manual	
	700-6961	2200 Programmer's Guide to Word Processing	

REASON/SYMPTOM FOR CHANGE

ADVANCE COPY

Maintenance Release of the Software.

DESIGN IMPROVEMENT ☐ | VENDOR REQUEST ☐

DOCUMENTS	REV F	REV T	EFFECTED Y	EFFECTED N
BOM				✓
ARTWORK				✓
E-REV				✓
SAMPLE BD				✓
ASSY. DWG.				✓
DRILL DWG.				✓
SCHEM. DWG.				✓
MECH. DWG				✓
DATE TO DOCUM				

DISPOSITION	Bonded	FINAL ASSY AREA	SUB ASSY AREA	PARTS IN HOUSE	PARTS OUTSIDE VENDOR	Future MFG.
USE AS IS TO PREVIOUS REV.						
TO CONFORM						
TO CONFORM WHERE FEASIBLE						

APPROVALS	DATE
FINAL	
DES. ENG.	
CUST. ENGRG.	
MFG. ENGRG.	
OTHER SIGN	3/2/83
DRAWING UPDATED	

13-8644B Printed in U.S.A. 4-82-4M

WANG LABORATORIES, INC.

SOFTWARE RELEASE

Software Engineering

PRODUCT LINE	SUBJECT	EFFECTIVE DATE
2200	WORD PROCESSING	03/01/83
TYPE	**RELEASE NO**	**S.E. PACKAGE NO**
GENERAL		0077

RELEASE ABSTRACT

Release 2.1 of 2200 Word Processing software is now available. It contains problem fixes to release 2.0 as well as numerous functional enhancements.

INSTALLATION/UPGRADE POLICY

Obsoletes Release(s): N/A

Prior release supported until: N/A

Installation:

( ) At next visit
( ) New systems
( ) Problem correction
( ) Other _____

( ) As soon as possible
(X) Authorized systems
( ) By: __/__/__

Special Installation Instructions:

See details which follow.

ALERT #1

	SOFTWARE ENGINEERING	DATE

2200 WORD PROCESSING

VERSION 2.1

March 1, 1983
S.E. Pkg #0077

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1.0 RELEASE ABSTRACT

Release 2.1 of 2200 Word Processing software is now available. It contains problem fixes to release 2.0 as well as numerous functional enhancements.

2.0 PRE-REQUISITES

2.1 Hardware

2200 VP/SVP/LVP/MVP with a minimum of a 28k partition.

2.2 Software

MVP, SVP (mutli-user systems) and LVP CPU's require Release 2.3, or greater, of the operating system.

VP series CPU's require release 2.5, or greater, of the operating system.

3.0 ALERTS

1. Due to problems with interfacing DATAMERGE 2.0 and WP 2.1, this software should only be installed at those sites that do not have DATAMERGE.

2. Column count in the $GIO editor is updated only at crossing lines, crossing white space, and upon use of special control characters (crossing or typing).

3. It should be noted that when releasing a document to background, only three conditions are to be considered:

    1. Attached terminal must be "00"
    2. Status must be "W"
    3. Global designation must be blank

    All of these are checked for in PSTAT. Partitions 2-16 are checked sequentially and the first partition for which all three conditions are true will be attached and released to by the directing workstation, leaving the monitor running in the original 28k partition.

    Current documentation on background monitor (Process Print Queue) is being updated.

4. 2245 and 2233/35 series printers are considered line printers for purposes of 2200 WP. They will, therefore, not underline, bold print, autoslash, or perform software-controlled form length settings.

5. Pressing FN '29 following a crash or RESET condition is likely to damage the resident WP program file on disk. This condition will be fixed in a later release.

6. Recover archive has not been included in this release.

4.0 DISTRIBUTION INFORMATION

This software will be distributed to all Branch, District, and Area Offices and to all customers who have ordered the package. (See Alert #1).

5.0 INSTALLATION INSTRUCTIONS

Refer to the installation procedure in the 2200 Word Processing Supervisor's Manual, page 1-1, section 1.3 "Loading The Software".

Note:
If installing from DSDD diskettes, it may be necessary to press EXECUTE to continue after "Mount Diskette" prompt without changing diskettes, as the install may be expecting SSSD diskettes.

6.0 MEDIA CONTENTS

See the attached enclosure which contains an alphabetized listing of all software modules.

7.0 RESTRICTIONS AND SPECIAL CONSIDERATIONS

1. New Wangwriter-compatible functions require the release 00.00 of Wangwriter software

2. A 42k partition is required to use the improved $GIO editor, Horizontal Scroll, and resident $GIO delete.

3. A 28k partition is restricted to running 80 column pages, and the original editor.

8.0 ENHANCEMENTS

Editor

1. An improved performance $GIO editor.

2. Horizontal Scrolling.

3. Resident $GIO delete.

4. Command "E" - provides escape from document without resaving page.

Printer

1. DW22-20 printer compatibility.

2. Standard functionality for twin sheet feed (i.e. first sheet from bin one, subsequent sheets from bin two).

3. Printer support of fifteen pitch.

Background Monitor

1. $ALERT - "Sleep" function.

2. "Process Print Queue" has been moved to Supervisory Functions.

Advanced Functions

These features are resident but will function only if the appropriate Wangwriter software is present.

1. Convert WP document to Wangwriter format.

2. Convert Wangwriter document to 2200 WP format.

Supervisory Functions

1. Process Print Queue" has been moved from Background monitor.

9.0 PROBLEMS CORRECTED

1. Various "Print from Archive" problems.

2. Various problems concerned with combinations of special characters in printing on both the DW-20 and 2281 printer series.

3. Embedded format line problems in print.

4. Page breaks and indent processing problems in editor.

5. Various "Merge Print" problems.

6. 2200 WP can now safely co-reside with 3270 protocol.

7. Footers and headers now function as they do in the OIS.

10.0 KNOWN ANOMALIES

1. Repagination of existing full pages, of pages with embedded format lines, or during the creation of full pages may potentially create problems, including the possible loss of text. This will be corrected in a later release.

2. When printing on a DW-20 and an entire line is underscored and any of the bold print, autoslash or double underscore flags are turned off within that line, the remaining underscores are likely to print at the far left margin. This is suspected to be a microcode peculiarity between the 2281W and the DW-20 printers.

3. Dectabs of columnar text which contain embedded blanks are treated somewhat differently than on the OIS, in that alignment is on the first blank space rather than the delimiter character.

4. Underlined keywords print out without underline on summary page.

11.0 REFERENCES

2200 Word Processing Operator's Guide (700-6937A)
2200 Word Processing Supervisor's Manual (700-6864A)
2200 Programmer's Guide to Word Processing (700-6961)

12.0 ENCLOSURES

Alphabetized listing of software modules.

2200 WP 2.1 SOFTWARE MODULES
DISK - D22 DATE - 02/16/83 PAGE 1

INDEX SECTORS = 199
END CAT. AREA = 52607
CURRENT END = 4634

ITEM	NAME	TYPE	START	END	USED	FREE	
1	.REFDAST	D	3955	3960	6	0	100.0%
2	.REFWPD	D	3215	3218	4	0	100.0%
3	.REFWPDV	D	2139	2143	5	0	100.0%
4	.REFWPFM	D	3407	3410	4	0	100.0%
5	.REFWPGN	D	3249	3252	4	0	100.0%
6	.REFWPP1	D	2704	2711	8	0	100.0%
7	.REFWPP2	D	2976	2983	8	0	100.0%
8	.REFWPP3	D	3125	3132	8	0	100.0%
9	.REFWPP4	D	3296	3303	8	0	100.0%
10	.REFWPP5	D	3336	3343	8	0	100.0%
11	609$CHR	P	1097	1109	13	0	100.0%
12	609$CHR1	P	3421	3423	3	0	100.0%
13	609$CHR2	P	3106	3108	3	0	100.0%
14	609$TRAN	D	1755	1758	4	0	100.0%
15	609.VAUR	P	228	265	38	0	100.0%
16	609.VER1	P	816	837	22	0	100.0%
17	609.VER2	P	1127	1138	12	0	100.0%
18	609.VERP	P	199	207	9	0	100.0%
19	609.VERQ	P	218	227	10	0	100.0%
20	609.VNTR	P	1422	1441	20	0	100.0%
21	609.VPRT	P	1664	1670	7	0	100.0%
22	609@ARCH	D	1700	1754	55	0	100.0%
23	609@CatC	P	2796	2812	17	0	100.0%
24	609@Cat1	P	2623	2631	9	0	100.0%
25	609@Cat2	P	3150	3177	28	0	100.0%
26	609@Cat3	P	2856	2865	10	0	100.0%
27	609@Cat4	P	3388	3402	15	0	100.0%
28	609@DO	D	653	655	3	0	100.0%
29	609@DOMP	P	2273	2284	12	0	100.0%
30	609@DEVC	D	2225	2235	11	0	100.0%
31	609@DFLT	P	1614	1627	14	0	100.0%
32	609@T	D	656	670	15	0	100.0%
33	609@VER	P	3424	3436	13	0	100.0%
34	609@arch	P	1840	1856	17	0	100.0%
35	609@devc	P	2357	2365	9	0	100.0%
36	609@lib1	P	4005	4033	29	0	100.0%
37	609@lib2	P	4212	4228	17	0	100.0%
38	609@psw2	P	4577	4589	13	0	100.0%
39	609@pswd	P	2866	2882	17	0	100.0%
40	609@sys	P	3909	3918	10	0	100.0%
41	609@term	P	3323	3332	10	0	100.0%
42	609@tmod	P	2613	2622	10	0	100.0%
43	609@vol	P	4201	4211	11	0	100.0%
44	609@vola	P	2366	2375	10	0	100.0%
45	609@volc	P	2038	2048	11	0	100.0%
46	609@volc	P	2787	2795	9	0	100.0%

2200 WP 2.1 SOFTWARE MODULES
DISK - 022 DATE - 02/16/83 PAGE 2

ITEM	NAME	TYPE	START	END	USED	FREE	
47	609Bvole	P	2848	2855	8	0	100.0%
48	609Bvolr	P	3782	3790	9	0	100.0%
49	609AC010	P	866	872	7	0	100.0%
50	609AC040	P	508	511	4	0	100.0%
51	609AC041	P	435	438	4	0	100.0%
52	609AC042	P	680	683	4	0	100.0%
53	609AC100	P	873	878	6	0	100.0%
54	609ACAT	P	466	476	11	0	100.0%
55	609ACOPY	P	3897	3903	7	0	100.0%
56	609ADV	P	2423	2427	5	0	100.0%
57	609AF100	P	502	507	6	0	100.0%
58	609AG060	P	1348	1352	5	0	100.0%
59	609AG061	P	1207	1211	4	1	80.0%
60	609AG140	P	879	882	4	0	100.0%
61	609AG141	P	1090	1096	7	0	100.0%
62	609AMOVE	P	2923	2929	7	0	100.0%
63	609AR100	P	3379	3384	6	0	100.0%
64	609AS010	P	3240	3248	9	0	100.0%
65	609AS100	P	3234	3239	6	0	100.0%
66	609AV010	P	2712	2720	9	0	100.0%
67	609AV020	P	2930	2937	8	0	100.0%
68	609B0	P	2590	2592	3	0	100.0%
69	609CINDX	P	1828	1839	12	0	100.0%
70	609CPRNT	P	1445	1463	19	0	100.0%
71	609Close	P	1994	2001	8	0	100.0%
72	609DEVL	P	296	302	7	0	100.0%
73	609Dpage	P	1918	1936	19	0	100.0%
74	609ECOM	P	3030	3036	7	0	100.0%
75	609EDATA	D	2049	2093	2	43	4.4%
76	609EDTR	P	2473	2562	90	0	100.0%
77	609EDTRG	P	4049	4197	149	0	100.0%
78	609EENTR	P	3679	3725	47	0	100.0%
79	609EFRMT	P	3626	3629	3	1	75.0%
80	609EHILT	P	1212	1255	44	0	100.0%
81	609EHYP	P	3195	3214	20	0	100.0%
82	609ELOLT	P	916	948	33	0	100.0%
83	609ENTRY	P	2306	2308	3	0	100.0%
84	609EPLIN	P	844	850	7	0	100.0%
85	609EPOS	P	2236	2240	5	0	100.0%
86	609EPRIN	P	4038	4048	11	0	100.0%
87	609EPRNT	P	1070	1080	11	0	100.0%
88	609EREP3	P	1256	1282	27	0	100.0%
89	609ERPG	P	3471	3491	21	0	100.0%
90	609ESPLN	P	3883	3886	4	0	100.0%
91	609ESRCH	P	3071	3105	35	0	100.0%
92	609EWICH	P	2909	2912	4	0	100.0%
93	609EXIT	P	3504	3506	3	0	100.0%
94	609Ebild	P	3791	3801	11	0	100.0%
95	609Ecm1	P	1492	1501	10	0	100.0%
96	609Ecm2	P	1658	1663	6	0	100.0%

ITEM	NAME	TYPE	START	END	USED	FREE	
97	609Ecm3	P	1762	1768	7	0	100.0%
98	609Ecom	P	4590	4596	7	0	100.0%
99	609Edel	P	4402	4410	9	0	100.0%
100	609Edtr	P	4467	4552	86	0	100.0%
101	609Eentr	P	3633	3678	46	0	100.0%
102	609Eform	P	2428	2453	26	0	100.0%
103	609Egotp	P	3607	3625	19	0	100.0%
104	609Ehilt	P	1151	1190	40	0	100.0%
105	609Ehyp	P	4597	4614	18	0	100.0%
106	609Eline	P	3444	3461	18	0	100.0%
107	609Eloct	P	2677	2681	5	0	100.0%
108	609Elolt	P	883	915	33	0	100.0%
109	609Enewc	P	1484	1491	8	0	100.0%
110	609Enewo	P	1978	1993	16	0	100.0%
111	609Eneww	P	3219	3229	11	0	100.0%
112	609Eoldo	P	3344	3355	12	0	100.0%
113	609Eoldr	P	2913	2922	10	0	100.0%
114	609Eolds	P	2682	2686	5	0	100.0%
115	609Eoldw	P	2094	2099	6	0	100.0%
116	609Epbld	P	671	673	3	0	100.0%
117	609Eplin	P	838	843	6	0	100.0%
118	609Eprnt	P	1059	1069	11	0	100.0%
119	609Erep1	P	4249	4256	8	0	100.0%
120	609Erep2	P	4287	4297	11	0	100.0%
121	609Erep3	P	4260	4286	27	0	100.0%
122	609Erep4	P	4034	4037	4	0	100.0%
123	609Erep5	P	3984	3987	4	0	100.0%
124	609Erpg	P	4615	4634	20	0	100.0%
125	609Escm0	P	4411	4466	56	0	100.0%
126	609Escm1	P	4395	4401	7	0	100.0%
127	609Escm2	P	4378	4380	3	0	100.0%
128	609Escm3	P	4355	4372	18	0	100.0%
129	609Escm4	P	4310	4354	44	1	97.7%
130	609Escm5	P	4298	4309	12	0	100.0%
131	609Escrn	P	3600	3606	7	0	100.0%
132	609Espln	P	3880	3882	3	0	100.0%
133	609Esrch	P	3037	3070	34	0	100.0%
134	609Estrt	P	3887	3896	10	0	100.0%
135	609Esum'	P	4381	4394	14	0	100.0%
136	609Ewich	P	2905	2908	4	0	100.0%
137	609FA100	P	512	516	5	0	100.0%
138	609FA200	P	578	584	7	0	100.0%
139	609FC010	P	694	702	9	0	100.0%
140	609FC020	P	439	450	12	0	100.0%
141	609FC030	P	517	522	6	0	100.0%
142	609FC040	P	1283	1290	8	0	100.0%
143	609FC100	P	703	707	5	0	100.0%
144	609FC200	P	451	457	7	0	100.0%
145	609FCLOS	P	2153	2158	6	0	100.0%
146	609FD100	P	1043	1047	5	0	100.0%

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ITEM	NAME	TYPE	START	END	USED	FREE	
147	609FD200	P	1405	1411	7	0	100.0%
148	609FDELT	P	684	690	7	0	100.0%
149	609FERM	P	276	283	8	0	100.0%
150	609FERM2	P	1691	1699	9	0	100.0%
151	609FF100	P	1291	1296	6	0	100.0%
152	609FF200	P	1110	1116	7	0	100.0%
153	609FG010	P	1412	1417	6	0	100.0%
154	609FG020	P	1048	1054	7	0	100.0%
155	609FG030	P	1117	1121	5	0	100.0%
156	609FG040	P	585	588	4	0	100.0%
157	609FG050	P	708	711	4	0	100.0%
158	609FG051	P	559	562	4	0	100.0%
159	609FG060	P	458	462	5	0	100.0%
160	609FG070	P	523	526	4	0	100.0%
161	609FG080	P	321	334	14	0	100.0%
162	609FG090	P	393	400	8	0	100.0%
163	609FG100	P	1418	1421	4	0	100.0%
164	609FG110	P	1297	1300	4	0	100.0%
165	609FG120	P	1122	1126	5	0	100.0%
166	609FG130	P	1055	1058	4	0	100.0%
167	609FG140	P	712	718	7	0	100.0%
168	609FG150	P	589	594	6	0	100.0%
169	609FG160	P	527	530	4	0	100.0%
170	609FG170	P	463	465	3	0	100.0%
171	609FG180	P	401	405	5	0	100.0%
172	609FG190	P	335	339	5	0	100.0%
173	609FR010	P	2944	2955	12	0	100.0%
174	609FR020	P	2721	2724	4	0	100.0%
175	609FR030	P	2593	2605	13	0	100.0%
176	609FR100	P	2956	2962	7	0	100.0%
177	609FR200	P	2725	2733	9	0	100.0%
178	609FZAP	P	1769	1795	27	0	100.0%
179	609Fmenu	P	2195	2208	14	0	100.0%
180	609Fpage	P	2120	2138	19	0	100.0%
181	609Fprep	P	2734	2745	12	0	100.0%
182	609Fstrt	P	3775	3781	7	0	100.0%
183	609GVer	P	2762	2768	7	0	100.0%
184	609GVer2	P	745	776	32	0	100.0%
185	609Gatt	P	4571	4576	6	0	100.0%
186	609Gatt2	P	4241	4248	8	0	100.0%
187	609Gdel	P	4373	4377	5	0	100.0%
188	609Gdel2	P	3936	3943	8	0	100.0%
189	609Gdet	P	4257	4259	3	0	100.0%
190	609Glos	P	3979	3983	5	0	100.0%
191	609Gpage	P	2285	2305	21	0	100.0%
192	609Hpage	P	1353	1365	13	0	100.0%
193	609INA	P	3845	3867	23	0	100.0%
194	609INAB	P	3133	3149	17	0	100.0%
195	609INAC	P	3012	3029	18	0	100.0%
196	609INAS	P	619	626	8	0	100.0%

ITEM	NAME	TYPE	START	END	USED	FREE	
197	609In	P	4553	4570	18	0	100.0%
198	609In2	P	4198	4200	3	0	100.0%
199	609Ipage	P	1502	1520	19	0	100.0%
200	609KEYS0	P	641	652	12	0	100.0%
201	609KEYS1	P	627	640	14	0	100.0%
202	609KEYS2	P	555	558	4	0	100.0%
203	609LCAT	P	310	320	11	0	100.0%
204	609MANAG	P	3904	3908	5	0	100.0%
205	609MENU	P	793	799	7	0	100.0%
206	609MERG0	P	1857	1877	21	0	100.0%
207	609MERG1	P	1903	1917	15	0	100.0%
208	609MERG2	P	1628	1644	17	0	100.0%
209	609MERGE	P	1878	1886	9	0	100.0%
210	609MNTR	P	2996	3008	13	0	100.0%
211	609MNTR0	P	611	613	3	0	100.0%
212	609Mpage	P	949	961	13	0	100.0%
213	609NPRNT	P	2024	2037	14	0	100.0%
214	6090pen	P	4233	4240	8	0	100.0%
215	609P2200	P	2984	2988	5	0	100.0%
216	609PARCH	P	3726	3730	5	0	100.0%
217	609PCHAR	P	3756	3766	10	1	90.9%
218	609PCRT	P	607	610	4	0	100.0%
219	609PECHO	P	2769	2774	6	0	100.0%
220	609PEXIT	P	2989	2992	4	0	100.0%
221	609PIDX	P	2823	2847	25	0	100.0%
222	609PIMAG	P	2606	2612	7	0	100.0%
223	609PINX	P	1574	1594	21	0	100.0%
224	609PINX0	P	208	212	5	0	100.0%
225	609PINXA	P	3304	3322	19	0	100.0%
226	609PLPT	P	406	410	5	0	100.0%
227	609PMERG	P	3385	3387	3	0	100.0%
228	609PMRG0	P	411	423	13	0	100.0%
229	609POPT0	P	2002	2023	22	0	100.0%
230	609POPT1	P	2209	2211	3	0	100.0%
231	609POPTA	P	1554	1562	9	0	100.0%
232	609POPTB	P	1671	1677	7	0	100.0%
233	609POPTC	P	1819	1821	3	0	100.0%
234	609PQUE	P	1304	1321	18	0	100.0%
235	609PR001	P	783	785	3	0	100.0%
236	609PR002	P	1442	1444	3	0	100.0%
237	609PR003	P	1301	1303	3	0	100.0%
238	609PR004	P	547	549	3	0	100.0%
239	609PR80	P	2993	2995	3	0	100.0%
240	609PR81	P	2775	2786	12	0	100.0%
241	609PRNEW	P	786	792	7	0	100.0%
242	609PRNT0	P	2454	2472	19	0	100.0%
243	609PRNT1	P	2309	2350	42	0	100.0%
244	609PRNTA	P	1678	1687	10	0	100.0%
245	609PRNTB	P	1563	1573	11	0	100.0%
246	609PWP	P	1896	1902	7	0	100.0%

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ITEM	NAME	TYPE	START	END	USED	FREE	
247	609Parch	P	3731	3749	19	0	100.0%
248	609QCAT	P	2582	2589	8	0	100.0%
249	609QINDX	P	3528	3549	22	0	100.0%
250	609RCVR1	P	3178	3189	12	0	100.0%
251	609RCVR2	P	2632	2647	16	0	100.0%
252	609RCVR3	P	2813	2822	10	0	100.0%
253	609RCVR4	P	3437	3443	7	0	100.0%
254	609RCVR5	P	3512	3523	12	0	100.0%
255	609RCVR6	P	3333	3335	3	0	100.0%
256	609RCVRA	P	2376	2387	12	0	100.0%
257	609RCVRZ	P	3190	3194	5	0	100.0%
258	609RNAME	P	2144	2152	9	0	100.0%
259	609Renam	P	2212	2224	13	0	100.0%
260	609SPRNT	P	3507	3511	5	0	100.0%
261	609SUPER	P	3999	4004	6	0	100.0%
262	609TC100	P	2746	2761	16	0	100.0%
263	609TC200	P	2963	2975	13	0	100.0%
264	609TC300	P	3114	3124	11	0	100.0%
265	609TRANS	P	1595	1613	19	0	100.0%
266	609UTIL	P	3109	3113	5	0	100.0%
267	609VCAT	P	3497	3503	7	0	100.0%
268	609VFREE	P	3961	3978	18	0	100.0%
269	609WC100	P	2883	2904	17	5	77.2%
270	609WC200	P	2665	2676	12	0	100.0%
271	609WC300	P	2648	2664	17	0	100.0%
272	609WCBEG	P	2388	2393	4	2	66.6%
273	609WP100	P	531	546	16	0	100.0%
274	609WP200	P	595	606	12	0	100.0%
275	609WP300	P	719	727	9	0	100.0%
276	609WW100	P	1322	1347	26	0	100.0%
277	609WW200	P	1139	1150	12	0	100.0%
278	609WW300	P	800	815	16	0	100.0%
279	609WWBEG	P	4229	4232	4	0	100.0%
280	609^dump	P	2571	2581	11	0	100.0%
281	609adfil	P	284	295	12	0	100.0%
282	609date	P	728	744	17	0	100.0%
283	609menu	P	962	997	36	0	100.0%
284	609start	P	563	577	15	0	100.0%
285	ADM.READ	P	3462	3465	4	0	100.0%
286	ADM.WRIT	P	3994	3998	5	0	100.0%
287	BMT02	P	3805	3844	39	1	97.5%
288	BUMPmain	D	213	217	1	4	20.0%
289	CAT.DEL	P	2104	2110	7	0	100.0%
290	CAT.FCRE	P	2100	2103	4	0	100.0%
291	CAT.FDEL	P	3403	3406	4	0	100.0%
292	CAT.FFCB	P	3802	3804	3	0	100.0%
293	CAT.FLIS	P	1887	1889	3	0	100.0%
294	CAT.FMOD	P	3767	3771	5	0	100.0%
295	CAT.FO/C	P	3361	3366	6	0	100.0%
296	CAT.FOC	P	1759	1761	3	0	100.0%

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ITEM	NAME	TYPE	START	END	USED	FREE	
297	CAT.INIT	P	1081	1084	4	0	100.0%
298	CAT.INS	P	851	860	10	0	100.0%
299	CAT.LIST	P	3868	3872	5	0	100.0%
300	CAT.OPEN	P	2400	2403	4	0	100.0%
301	CAT.PRIM	P	3988	3993	6	0	100.0%
302	CAT.RD	P	2687	2690	4	0	100.0%
303	CAT.VCRE	P	3873	3876	4	0	100.0%
304	CAT.VLIS	P	3772	3774	3	0	100.0%
305	CAT.VMAN	P	2411	2414	4	0	100.0%
306	CAT.newo	P	2241	2259	18	1	94.7%
307	CAST.COM	P	2566	2570	5	0	100.0%
308	CAST.DAT	P	3944	3954	11	0	100.0%
309	DOC.CLOS	P	3524	3527	4	0	100.0%
310	DOC.CRET	P	1645	1657	13	0	100.0%
311	DOC.DEL	P	677	679	3	0	100.0%
312	DOC.INIT	P	3933	3935	3	0	100.0%
313	DOC.OPEN	P	3367	3373	7	0	100.0%
314	DOC.PASS	P	3630	3632	3	0	100.0%
315	FILERS	P	424	434	11	0	100.0%
316	GLS.ATCH	P	1890	1895	6	0	100.0%
317	GLS.CALL	P	3466	3470	5	0	100.0%
318	GLS.DTCH	P	2563	2565	3	0	100.0%
319	JCAT	P	3253	3295	43	0	100.0%
320	JCATSMAL	P	1366	1404	39	0	100.0%
321	OPSUBS	P	477	501	25	0	100.0%
322	PAG.APD	P	1085	1089	5	0	100.0%
323	PAG.DEL	P	2114	2119	6	0	100.0%
324	PAG.GOTO	P	2268	2272	5	0	100.0%
325	PAG.INS	P	861	865	5	0	100.0%
326	PAG.READ	P	2111	2113	3	0	100.0%
327	PAG.REWT	P	2415	2422	8	0	100.0%
328	PAG.SRCH	P	3374	3378	5	0	100.0%
329	PAG.SUB	P	3230	3233	4	0	100.0%
330	PASSWORD	P	3492	3496	5	0	100.0%
331	PSUB.DAT	P	2351	2356	6	0	100.0%
332	PSUB195	P	550	554	5	0	100.0%
333	PSUB196	P	614	618	5	0	100.0%
334	PSUB1960	P	3009	3011	3	0	100.0%
335	PSUB197	P	777	782	6	0	100.0%
336	PSUB198	P	303	306	4	0	100.0%
337	PSUBS00	P	1822	1827	6	0	100.0%
338	PSUBS000	P	3750	3755	6	0	100.0%
339	PSUBS159	P	3877	3879	3	0	100.0%
340	PSUBSALL	P	340	344	5	0	100.0%
341	Pqueue	D	3550	3599	50	0	100.0%
342	Prime 62	P	1796	1818	23	0	100.0%
343	QSUBS02	P	1464	1483	20	0	100.0%
344	REC-GEN	P	2159	2194	36	0	100.0%
345	REC-JCAT	P	1521	1553	33	0	100.0%
346	REC-RD	P	2938	2943	6	0	100.0%

ITEM	NAME	TYPE	START	END	USED	FREE	
347	REC.CRE	P	1191	1200	10	0	100.0%
348	REC.DEL	P	2404	2410	7	0	100.0%
349	REC.FREE	P	2691	2703	13	0	100.0%
350	REC.INIT	P	674	676	3	0	100.0%
351	REC.INS	P	1201	1206	6	0	100.0%
352	REC.MOVE	P	2260	2267	8	0	100.0%
353	REC.PRIM	P	3919	3932	14	0	100.0%
354	REC.RD	P	2394	2399	6	0	100.0%
355	REC.REP	P	3356	3360	5	0	100.0%
356	REC.page	P	1937	1977	41	0	100.0%
357	RECMGR	P	998	1042	45	0	100.0%
358	START	P	691	693	3	0	100.0%
359	WPFM.DAT	P	3411	3420	10	0	100.0%
360	WPINSTLL	P	345	392	48	0	100.0%
361	WPSUPER	P	1688	1690	3	0	100.0%
362	WPSYSTEM	D	266	275	10	0	100.0%
363	WPstart	P	307	309	3	0	100.0%

SUMMARY OF DISK USAGE

	PROGRAM FILES	DATA FILES
ACTIVE	344	19
SCRATCHED	0	0
TOTAL	344	19

NUMBER OF SECTORS USED BY ALL FILES = 4376
NUMBER OF FREE SECTORS WITHIN ALL FILES = 60
NUMBER OF SECTORS ALLOCATED TO ALL FILES = 4436

WANG LABORATORIES, INC.
ONE INDUSTRIAL AVENUE, LOWELL, MA 01851 • TEL: 617/459-5000, TWX 710-343-6769, TELEX 94-7421

Software Release Notice # 0553

Quality Assurance

SRN Type ☐ *Multi-package* ☐ *Individual*		*ECO No.* 36585	*Effective Date* [illegible]
Description Word Processing			*Version* 2.3.2
Product Line 2200	*Release Category* Unrestricted		*Package Number* 195-2174
Testing Organization OASS			

Bill of Materials

Package #	*Part #*	*Description*
Change BOM 195-2174-3 as follows:		
Delete	701-2700-A	Diskette 1 of 4
	701-2711-A	Diskette 2 of 4
	701-2712-A	Diskette 3 of 4
	701-2762	Diskette 4 of 4
	701-2736-A	WP on 2200 Disk 1
	701-2737-A	WP on 2200 Disk 2
	701-2738-A	WP on 2200 Disk 3
	701-2739-A	WP on 2200 Disk 4
	700-6937	2200 WP Manual
	700-6961	2200 Prog Guide
NOTE: SDC is to delete 701-2736-B, 701-2737-B, 701-2738-B and 701-2739-B.		
Add	701-2736-D	Diskette 1 of 4
	701-2737-D	Diskette 2 of 4
	701-2738-D	Diskette 3 of 4
	701-2739-D	Diskette 4 of 4
	700-6864-B	2200 WP Manual
	700-6937-C	2200 WP Software
	700-6961-B	2200 Prog Guide
Change BOM 195-2174-5 as follows:		
Delete	731-0027-A	Diskette 1 of 2
	731-0129	Diskette 2 of 2
	700-6864-A	2200 WP Manual
	700-6937	2200 WP Software
	700-6961	2200 Prog Guide
NOTE: SDc is to delete 731-0067-B and 731-0071-B.		
Add	731-0067-D	Diskette 1 of 2
	731-0071-D	Diskette 2 of 2
	700-6864-B	2200 WP Manual
	700-6937-C	2200 WP Software
	700-6961-B	2200 Prog Guide

Change BOM 195-2174-9 as follows:

Delete	731-0093-A	Diskette 1 of 4
	731-0094-A	Diskette 2 of 4
	731-0095-A	Diskette 3 of 4
	731-0096-A	Diskette 4 of 4
	700-6864-A	2200 WP Manual
	700-6937	2200 WP Software
	700-6961	2200 Prog Guide
Add	731-0093-C	Diskette 1 of 4
	731-0094-C	Diskette 2 of 4
	731-0095-C	Diskette 3 of 4
	731-0096-C	Diskette 4 of 4
	700-6864-B	2200 WP Manual
	700-6937-C	2200 WP Software
	700-6961-B	2200 Prog Guide

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SOFTWARE PRODUCT RELEASE RECOMMENDATION

This recommends the release of 2200 Word Processing, Version 2.3.2 from the Development Center to Distribution. By the signatures below, the groups involved in the development of this product indicate that all requirements pertaining to the release of the product have been met (accept), and the product is recommended for release; or that the product is not recommended for release at this time (reject). Lack of a signature and release recommendation indicates that the named group has had insufficient involvement in the development effort to make a release recommendation at this time.

SOFTWARE PRODUCT: Word Processing
Version 2.3.2
WLI No: 195-2174
ECO No: 36585
SRN No: 0553
PEP No:

PRODUCT LINE/MODEL: 2200

ORIGINATOR: Software R & D

RELEASE CATEGORY: Unrestricted

EFFECTIVE DATE: May 2, 1985

SOFTWARE PRODUCT RELEASE RECOMMENDATIONS

☒ Accept	☐ Reject	Software R&D: Sheila D. Mitchell	Date: 5-2-85
☐ Accept	☐ Reject	Quality Assurance:	Date:
☒ Accept	☐ Reject	Product Line Software Support: Sheila D. Mitchell	Date: 5-2-85
☒ Accept	☐ Reject	Product Planning and Management: Ken Capps	Date: 5/2/85
☒ Accept	☐ Reject	Corporate ECO: Marianne Ray	Date: 5/3/85

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TESTING/EVALUATION

Software Product: 2200 Word Processing
Version: 2.3.2
Testing Organization(s): OASS

SRN #: 0553
Date: 05/02/85

Results:

Testing and review of the problems corrected by Word Processing release 2.3.2 has been completed. Most of the efforts were concentrated on the problems associated with the printers. The printer problems tested were checked against both the 2281W and the DW2200 printers both utilizing the tractor feed as well as the twin sheet feeder.

Probes tested and reviewed in detail include:

F004002	F004042	F004233	F004768	F004849
F004948	F004984	F005311	F005403	F005586
F006077	F006256	F007179	F003944	F006371
F005207	F007180			

Probes that were not tested but were verified that the fixes are in Word Processing Release 2.3.2 include:

F004162	F005191	F005850	F006099	F006416
F006584	F007000	F004354		

Probes tested performed in a satisfactory manner and it is felt that they will also perform satisfactorily in the field. It is therefore recommended that the product be released to the field.

WANG

ECO

ECO NO. 36585

SHEET 1 OF

ORIGINATOR	Roger Lynn	M/S	0121A	EXT. 1-36-60833	DATE 04/26/85
WRITTEN BY	Jeannine Roy	M/S	1218B	EXT. 76930	DATE 04/26/85

PART NO. 195-2174-3/-5/-9	DESCRIPTION Word Processing 2.3.2
DWG NO. N/A	
MODEL NO. 2200 VP/SVP/LVP/MVP	PEP # PEP# H0133A
CLASS I (II) III	TYPE ☐ HARDWARE ☒ SOFTWARE

DESCRIPTION OF CHANGE

Change BOM 195-2174-3 as follows:

	WLI#	DESCRIPTION	UM	COMP TYPE	QTY	QTY TYPE
DELETE	701-2700-A	Diskette 1 of 4	EA	1	1	1
	701-2711-A	Diskette 2 of 4	EA	1	1	1
	701-2712-A	Diskette 3 of 4	EA	1	1	1
	701-2762	Diskette 4 of 4	EA	1	1	1
	701-2736-A	WP on 2200 Disk 1	EA	1	1	1
	701-2737-A	WP on 2200 Disk 2	EA	1	1	1
	701-2738-A	WP on 2200 Disk 3	EA	1	1	1
	701-2739-A	WP on 2200 Disk 4	EA	1	1	1
	700-6864-A	2200 WP Manual	EA	1	1	1
	700-6937	2200 WP Software	EA	1	1	1
	700-6961	2200 Prog Guide	EA	1	1	1

NOTE: SDC is to delete 701-2736-B, 701-2737-B, 701-2738-B and 701-2739-B.

Continued on next page

REASON/SYMPTOM FOR CHANGE

New Release

SOFTWARE

DOCUMENTS

	REVISIONS F	REVISIONS T
BOM		
ARTWORK		
E-REV		
SAMPLE BD		
ASSY. DWG.		
DRILL DWG.		
SCHEM. DWG.		
MECH. DWG.		
CBL ASSY. DWG.		
S.P.I.		
MECH ASSY. DWG.		
COMPONENT SPEC		

EFFECTIVITY	RE-MFG.	C.E.	DIST.	FINAL ASSY. AREA	SUB ASSY. AREA	FUTR MFG.
TO CONFORM			X			
USE AS IS TO PREVIOUS REV.						

APPROVALS

	DATE
ECO MGR.	
DES. ENGRG.	
CUST. ENGRG. Sheila Mitchell	4-30-85
MFG. ENGRG.	
ORIGINATOR Sheila D. Mitchell	4-30-85
F.C.C.	

WANG	ENGINEERING CHANGE ORDER CONTINUATION SHEET	DOCUMENT NO.	OLD REV	NEW REV
DOCUMENT TITLE:	THIS ECO SHT, WHEN ATTACHED TO DOCUMENT OF PREVIOUS REV CONSTITUTES THE LATEST DOC.	ECO NO. 36585	SHT 2	OF

DESCRIPTION OF CHANGE:

Continued from page one

Change BOM 195-2174-3 as follows:

	WLI#	DESCRIPTION	UM	COMP TYPE	QTY	QTY TYPE
ADD	701-2736-D	Diskette 1 of 4	EA	1	1	1
	701-2737-D	Diskette 2 of 4	EA	1	1	1
	701-2738-D	Diskette 3 of 4	EA	1	1	1
	701-2739-D	Diskette 4 of 4	EA	1	1	1
	700-6864-B	2200 WP Manual	EA	1	1	1
	700-6937-C	2200 WP Software	EA	1	1	1
	700-6961-B	2200 Prog Guide	EA	1	1	1

Change BOM 195-2174-5 as follows:

	WLI#	DESCRIPTION	UM	COMP TYPE	QTY	QTY TYPE
DELETE	731-0027-A	Diskette 1 of 2	EA	1	1	1
	731-0129	Diskette 2 of 2	EA	1	1	1
	731-0067-A	WP on 2200	EA	1	1	1
	700-6864-A	2200 WP Manual	EA	1	1	1
	700-6937	2200 WP Software	EA	1	1	1
	700-6961	2200 Prog Guide	EA	1	1	1

NOTE: SDC is to delete 731-0067-B and 731-0071-B.

ADD	731-0067-D	Diskette 1 of 2	EA	1	1	1
	731-0071-D	Diskette 2 of 2	EA	1	1	1
	700-6864-B	2200 WP Manual	EA	1	1	1
	700-6937-C	2200 WP Software	EA	1	1	1
	700-6961-B	2200 Prog Guide	EA	1	1	1

Change BOM 195-2174-9 as follows:

	WLI#	DESCRIPTION	UM	COMP TYPE	QTY	QTY TYPE
DELETE	731-0093-A	Diskette 1 of 4	EA	1	1	1
	731-0094-A	Diskette 2 of 4	EA	1	1	1
	731-0095-A	Diskette 3 of 4	EA	1	1	1

Continued on next page

WANG	ENGINEERING CHANGE ORDER CONTINUATION SHEET	DOCUMENT NO.	OLD REV	NEW REV
DOCUMENT TITLE:	THIS ECO SHT, WHEN ATTACHED TO DOCUMENT OF PREVIOUS REV CONSTITUTES THE LATEST DOC.	ECO NO. 36585	SHT 3	OF

DESCRIPTION OF CHANGE:

Continued from page two

Change BOM 195-2174-9 as follows:

	WLI#	DESCRIPTION	UM	COMP TYPE	QTY	QTY TYPE
DELETE	731-0096-A	Diskette 4 of 4	EA	1	1	1
	700-6864-A	2200 WP Manual	EA	1	1	1
	700-6937	2200 WP Software	EA	1	1	1
	700-6961	2200 Prog Guide	EA	1	1	1
ADD.	731-0093-C	Diskette 1 of 4	EA	1	1	1
	731-0094-C	Diskette 2 of 4	EA	1	1	1
	731-0095-C	Diskette 3 of 4	EA	1	1	1
	731-0096-C	Diskette 4 of 4	EA	1	1	1
	700-6864-B	2200 WP Manual	EA	1	1	1
	700-6937-C	2200 WP Software	EA	1	1	1
	700-6961-B	2200 Prog Guide	EA	1	1	1

SOFTWARE RELEASE NOTICE

FOR

PRODUCT: 2200/WP

VERSION: 2 . 3 . 2

HARDWARE

2200 VP, SVP, MVP, LVP

Part Number: 195 - 2174 - 3/5/9

Software Release Notice: 0 5 5 3

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3.0 RESTRICTIONS AND SPECIAL CONSIDERATIONS

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6.0 KNOWN ANOMALIES

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9.0 REFERENCES

1.0 RELEASE ABSTRACT

2200/WP is a word processing system designed to run on the 2200 BASIC-2 Operating System. This version of 2200/WP is a maintenance release designed to correct some existing anomalies in the system.

2.0 PREREQUISITES AND DEPENDENCIES

2.1 Hardware

2200/WP must execute on a machine with the following characteristics

1. CPU - Only a 2200 VP, SVP, MVP, LVP, MVPC or LVPC may be used. This CPU must have a minimum of 32K of memory. Minimum partition size must be 28K.

2. Workstations - 2200/WP may be used on any 2200 workstation although DE terminals may not contain all functions.

3. Printers - 2200/WP may be used with any 2200 printer although some printers may not support all functions. 2200/WP will not support PC printers.

2.2 Software

1. 2200 Operating System - Version 2.5 or higher of the 2200 BASIC-2 Operating System should be used. The system may work on lower versions of the operating system but all functions may not be supported.

2. 2200/WP - Version 2.2 of the 2200/WP is required. Installation on lower versions may cause the system to stop functioning properly.

3.0 RESTRICTIONS AND SPECIAL CONSIDERATIONS

2200/WP will is not supported for any PC printers supported by OS Release 2.6 printer driver tables. It is only supported for dedicated 2200 printers.

This release also includes a change inadvertently excluded from Release 2.3.1. This change effects Top of Form for DW22-20 printers.

4.0 ENHANCEMENTS

The print queue has been modified to function more like the print queues in other Wang WP systems. The print queue will now automatically be restarted after printing a document in immediate mode.

5.0 PROBLEMS CORRECTED

The following is a brief description of the problem with the procedure used to resolve the problem and the affected program.

F004002 Printing 158 characters causes improper word wrap.

F004042 Printing multipage documents loses TOF.

F004162 Accessing supercopy from Terminal 2 while another Terminal 1 is using it gives the correct message, "Work file in use", but hangs the T1 until operator cancels out of T2.

F004233 WPFM writing bad data to sector 16448 whenever the volume filled up and you tried to add a document.

F004768 Number of originals option not functioning in Merge Print.

F004849 Document summary statistics lacking number of keystrokes and number of pages when printing in background.

F004948 DW-20 printers disregarding carriage returns at top of form.

F004984 Printer lost top of form on multipage documents.

F005191
F004354 P57 with use of accent during normal operations.

F005311 System selects wrong bin when using a twin sheet feeder with a DW22-20 or 2281W while specifying 12 Pitch on the print options. (Also F005961)

F005403 Printer lost top of form on cancelling a document while printing.

F005586 Printing document summary caused loss of top of form.

F005850 Convert of a WP to a TC file causes the system to rebuild the page table when you try to edit the document requiring an extensive amount of time.

F006077 Printer deselect not functioning for operator after printing archive index on DW22-20 or 2281W.

F006099 Volume verify and recover does not handle D88 problems correctly.

F006256
F007179
F003944 Print Queue does not automatically restart after document printed in immediate mode. User had to reprocess print queue or send another document to print before queue would restart printing.

F006371 Merge print wasting paper when printing.
F005207

F006416 Deffn'218 not returning values for document summary correctly.

F006584 If the last character in a WP document is a special character(s) and you convert the document to a TC file, when you convert the TC file back to a WP file the character(s) will not be converted correctly by CONVERT TC FILE TO WP.

DAST.COM V2$(256)1 missing from COM statement.

F007000 609PRNT1 abends with a P57 when printing a multipage document with a double spaced format line and many returns followed immediately by tabs.

F007180 WP background print. If a document is sent to an immediate print to an unavailable printer, the system hangs.

6.0 KNOWN ANOMALIES

None

7.0 MEDIA CONTENTS

2200 WP Version 2.3.2 (complete)

8.0 SOFTWARE INSTALLATION

SYSTEM UPDATE INSTALLATION INSTRUCTIONS

Do a back-up of your system before installing this release. This is for your protection. Should anything happen during the installation procedure you may be required to recover from this back-up to make your system operational.

Wang Laboratories takes no responsibility for changes made by the user on the standard software. In using this update program you may overwrite these changes and be required to reinput them into your programs.

The installation of the maintenance release is performed by:

1. Do a back-up of your system.

2. Mount diskette.

3. Type in SELECT DISK XXX.

4. LOAD RUN "WPINSTLL"

5. Enter the information as it is requested on the screen. Select 'Copy Programs Only', 'Copy and Verify' and 'Replace All Files'.

6. After the successful installation, the WP menu message 2.2 should be replaced by 2.3. Please check your menu message and if it is not 2.3 restore from your back-up and restart the procedure at step 2. If it fails to replace the message a second time please restore from your back-up and then contact your area representative.

When this procedure has successfully completed your system will contain the new update.

9.0 REFERENCES

None

WANG

Customer Software Release Notice

2200 Word Processing

Release 2.4.0

Customer Software Release Notice # 714-9135

First Edition, 1986

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Customer Software Release Notice

PRODUCT: 2200 WP 2.4.0

HARDWARE: 2200 VP, SVP, MVP, LVP

Part Number: 195-2174-3/5/9

CSRN #: 714-9135

Date: 7 Oct 1986

First Edition, 1986

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1.0 Release abstract

2200 WP is a word processing system designed to run on the 2200 BASIC-2 Operating System. This version of 2200 WP is a general release designed to correct some existing anomalies in the system. In particular, a number of printing and system (VAU map) problems have been corrected. See section 5 for details.

2.0 Prerequisites and dependencies

2.1 Hardware

2200 WP must execute on a machine with the following characteristics

1. 2200 CPUs: MicroVP, MVP, LVP, SVP(W), or VP may be used. User memory must be at least 28K.

2. Workstations: 2236DW, 2336DW, and 2436DW. Other 2200 workstations will work but all functionality is not supported.

3. Printers: 2200 WP may be used with any 2200 printer although some printers may not support all functions. For details, consult the 2200 Operators Guide (700-6937) Appendix E, page E-2.

2.2 Software

1. 2200 Operating System: Version 2.6.2 or higher of the 2200 BASIC-2 Operating System should be used. The system may work on lower versions of the operating system but all functions may not be supported.

2. 2200 WP: No restrictions. Complete system is contained in distributed software and may be installed over any previous release.

3.0 Restrictions and special considerations

2200 WP is not supported for any printers which use the printer driver tables. It is only supported for dedicated 2200 printers.

The top of form rules for printing have been changed so that a top of form is executed only at the beginning of the document.

4.0 Enhancements

None

5.0 Functional revisions

The following list is a brief description of the reported problems that have been corrected with WP 2.4.0.

Description

.....Printing problems.....

You have several doc. in background print. Doc X is now printing and you elect to cancel said doc via special print functions/cancel print request. If you cancel the print while it is printing it hangs the printer. Also happens with cancel index printout.

WP 2.3.2 feeds an extra sheet of paper between each new document Multiple copies work fine the problem is only with different document customer claims that this was not the case in 2.2 NOTE: This is in background print queue.

Cancel library index print does not stop printing with back- ground processing. The foreground processing does stop the report but the message 'Cancelled by operator' is not reported.

Twin feeder does not feed from first bin when selected to standard form (only for pre-release 2.3.3).

Document index reports only five hundred (500) documents. Using either display or print index, the system does not report or give a warning message for the documents over the count of 500. The other documents can be accessed for edit, delete, or archiving but operator must know the numbers.

Incorrect page numbering occurrs when printing document containing a header and footer which start on different pages.

WP will not print a document on 8 by 14" paper. Using a character printer and setting: 1) paper length = 84 or 86 (fails on both) 2) footer begins at line 80. Fails on two different printers. Document prints 60 lines then goes to new page and prints rest of document about 14 lines.

5.0 Functional revisions (continued)

.....System (VAU map) problems.....

Verifying a VOLUME shows 2 VAU errors and no name tree error if continue execution of the recovery process get error P57 in line 516: VOLUME is not recovered

Verify & Recover does not find damaged text sectors. The VAU map and name tree are O.K. but the document can not be edited. The editor will report 'Going to page X' but stop with 'error reading page Y error = 74 please cancel' (X not same number as Y). Try to edit again and get error 74 during rebuild page table.

Verify & Recover does not correct all problems in volume. After performing V. & R. with four (4) errors, one error is left. Performing a second time, the error count is zero. How ever, editing the 'repaired' document can not be done until the option '(2) Delete Damaged Part of Doc.' is performed.

VAU map damage occurs when Delete and Create are used at the same time. Delete processing can be 'File to Archive' or 'Delete from library' with single or range option. Damage will not always happen but has been observed after the msg. 'Archive not found' after 'File to Archive' with range used.

.....System (general) problems.....

WPFM error in create new volume. run verify and recover and 53 vau errors are displayed. program abends with p57 error

While attempting to run "RCACCESS" (doc. access subs) the program terminates with a P59 error at line 4369 "ADM.READ" P59 is a illegal redimension error.

When attempting to create a new volume in WP, frequently the system will respond with "DISK NOT AVAILABLE" and that's all No explaination No alternatives. It seems if anybody is using a disk the system responds not available and never che cks again. I you continue to hit EXEC it will eventually run

5.0 Functional revisions (continued)

Display System Defaults stops with error X74 at line 190 when terminal has library or archive field blank. Four (4) colons are diplayed when library is blank and eleven (11) when archive is blank.

SERIOUS ERROR OCCURED CALL YOUR WANG REPRESENTATIVE.4750 appears when opening volume fourteen(14). The error happens when using 'Create' or 'Add' in the Volume Maintenance program of Manage System Configuration module. Program works if you try it three (3) times.

System stops with error P34 at line 2030 when WP is started from background.

'Last archived' date field is not recorded on the document. The date is changed on the archived version of the document.

When a volume with 3,312 sectors is created, three (3) VAU map errors are reported by 'Verify and Recover'. Only work done with the volume was to create the volume and library. Other sector sizes in the three thousand three hundred range also fail. Eg. 3,315 has 5; 3320 has 11; 3331 has 21 and others in the three thousand range.

"ERROR writing FCB - Press CANCEL" results with password protected documents during the "CLEAR IN USE CONDITION" function. Happens when WS has no password or incorrect password.

Message 'Achive not found' is displayed when performing copy or file to archive with a range of documents.

.....Edit and Create document problems.....

Attempting to insert text into a full page will cause a P56 at line 142 with the $GIO editor. Partition size is 42K.

When trying to verify a glossary containing a Hex(7B) section symbol the system responds with a unable to verify unretreavable text ?

5.0 Functional revisions (continued)

Using 42K editor with full page, text is lost.

While doing INSERT, execute PREVIOUS SCREEN and edit text on the previous screen portion of document. Insert message will remain as prompt until EXECUTE is performed. Document will have both inserted and edited text. However, VS WP advises operator to 'Finish insert first', ie PREVIOUS SCREEN not OK.

Cancel search does not work. After a search is started, the operator must wait until the search is finished. Other WANG WP systems (OIS and VS) allow the search to be canceled. The 'problem' is in the both the 28K and 42K editor. This is very frustrating when a large document is used.

Create document stops with file not found (ie D82) after the message 'Error saving first page'. The D82 appears with line number 9031 and two colons after 9031.

Serious error, Call WANG, and stop at line 5070 appears when creating a document. This does not always happen with any size volume. Customers have reported problem but unable to duplicate with their data. With volume of 123 sectors, failure always happens!

Create document program stops with P34 at line 4978. This error requires a number of special conditions to be met when the Create document process is performed. Consequently, the problem is difficult to reproduce with any size volume but with a small volume the error will EVENTUALLY happen.

6.0 Special conditions

Editing documents in wp when you get into the autoscore mode if you hit a lower case p it will go directly out of autoscore mode. If p is not the first character underscored it will work fine

7.0 Media contents

2200 WP Version 2.4.0 (complete)

8.0 Software installation

SYSTEM UPDATE INSTALLATION INSTRUCTIONS

Do a back-up of your system before installing this release. This is for your protection. Should anything happen during the installation procedure you may be required to recover from this back-up to make your system operational.

Wang Laboratories takes no responsibility for changes made to the standard WP software by the user. This update procedure will overlay all the WP programs except the one named START without operator intervention. See step six (6) for special instructions.

The installation of the maintenance release is performed by:

1. Do a back-up of your system.

2. Mount diskette number one (1).

3. Enter SELECT DISK XXX (XXX is disk with new software).

4. Enter LOAD RUN "WPINSTLL"

5. Enter the information as it is requested on the screen. Select 'Copy Programs Only', 'Copy and Verify', 'Replace All Files' and press EXEC to begin processing.

6. Note that the WP 'START' program will be moved from the last diskette and the system will stop and ask the operator if the program should be replaced. Installations with a customized (special) start up program should answer this question with N (no).

7. After the successful installation, the message 'All software is now installed and updated' will appear on the screen. If the installation required more space, the number of 'junk' files will be reported. The junk files have the name 'JUNKxxx' where xxx is a sequence number.

When this procedure has successfully completed, your system will contain the new system and the WP menu message will be 'Release 2.4.0'. Please check your menu message and if it is not correct restore from your back-up and restart the procedure at step 2. If it fails to replace the message a second time please restore from your back-up and then contact your WANG representative.

9.0 References

2200 Word Processing Operator's Guide (700-6937)
2200 Programmer' Guide to WP (700-6961)
2200 WP Supervisors Manual (700-6864)
BASIC-2 Disk Reference Manual (700-4081)

Technical Service Bulletin
Section: Software Technical

SWT ____ Product # 2200 WP 02.04.00

Title: TOP OF FORM RULES IN 2200 WP

Purpose:
To inform the field and users that the rules in 2200 WP release 02.04.00 have been changed regarding "top of form".

Description:
With the introduction of 2200 WP release 02.04.00 all printers and CPU's will have new rules for "Top Of Form" when using Word Processing. Very simply the system will call for a "Top Of Form" (TOF) at the beginning of each WP document sent to a printer.

There were many problems with previous releases of 2200 WP regarding this issue. In general the system would call for TOF at the end of the document, but under certain conditions it could also call for TOF at the beginning or sometimes both at the beginning and the end. This caused problems for people who were running DP applications and WP applications simultaneously. If the DP application did not call for TOF at the end of its report and if the next WP document did not call for a TOF, the WP document would start printing where the DP report left off and thus loosing TOF.

The other problem was when WP called for TOF at the beginning and the end of the document, although this guaranteed TOF it would also result in extra sheet feeds, which was not acceptable to our users with multicopy preprinted forms (every other sheet would be wasted).

The only logical answer that would accommodate the majority of application and the current 2200 WP architecture, was a TOF at the beginning of the each document and none at the end. This would alleviate the problems with DP vs WP users, because WP would guarantee the TOF. Our users with preprinted forms again would benefit, because they would only see one TOF per document, hence no extra sheet feeds.

The only complaint has been that under the new rules, a document will not automatically clear the printer platen after it has printed. This is because the system does not call for a TOF until the next document. There is an easy circumvention for this problem, the user need only put a page break at the end of the document if they want it to clear automatically, BUT THIS WILL CAUSE EXTRA SHEET FEEDS, or they may manually hit the form feed button on the printer.

We feel that this is the best approach to accommodate the majority of users and guarantee TOF for all users.

CS/2200 WP
Release 2.60
Customer Software Release Notice

1st Edition -- September 1990
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715-3860

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PREFACE

This customer software release notice (CSRN) describes the changes and new features of Release 2.60 of CS/2200 WP. CS/2200 WP is a word processing system designed to run on the CS/2200 BASIC-2 Operating System. This version of CS/2200 WP is a general release designed to support printers requiring the printer drivers that were implemented from Operating System 2.7.

For more information, refer to the following documents:

- 2200 Word Processing Operator's Guide (700-6937)
- 2200 Programmer's Guide to WP (700-6961)
- 2200 WP Supervisors Manual (700-4081)
- CS Multiuser BASIC-2 Language Reference Manual (700-4080E)

SECTION 1
INTRODUCTION TO RELEASE 2.60

OVERVIEW

This section discusses the hardware and software requirements for Release 2.60 as well as the media contents.

REQUIREMENTS

Hardware

CS/2200 WP must run on a machine with the following characteristics:

1. CS-2, CS-5, CS-10, CS-20, CS-40, CS-80, CS/386 CPUs may be used. User memory must be at least 28K. CS/386 requires 50K memory.

2. 2200 CPUs: CS, CS/386, MicroVP, MVP, SVP(W), or VP may be used. User memory must be at least 28K. CS/386 requires 50K memory.

3. Workstations: 2236DW, 2336DW, 2436DW, 2436WP, and 2536DW. Other 2200 workstations will work but the full functionality is not supported.

4. Printers: CS/2200 WP may be used with any 2200 printers although some printers may not support all functions. To use the newer PM0 series, a printer driver must be configured for the relevant printer.

Software

The following are the software characteristics for CS/2200 WP.

1. CS/2200 Operating System: Version 3.0 or later of the BASIC-2 Operating System should be used. Correct versions of printer drivers must be installed since the drivers are not upwardly compatible. The system may work with earlier versions of the operating system but all the functions may not be supported.

2. CS/2200 WP: No restrictions. The complete system is contained in distributed software and may be installed over any previous release.

MEDIA CONTENTS

CS/2200 WP Version 2.6.0 (complete) is required.

SECTION 2
ENHANCEMENTS

OVERVIEW

This section discusses enhancements made by Release 2.60.

ENHANCEMENTS

5 1/2-inch Diskettes

It was not previously possible to use 5 1/2-inch diskettes as the archive diskette on 2275 and DS. This support is now provided. Most users do not have 2270 drives.

Note that 5 1/2-inch diskettes are not compatible with VS/OIS and PC diskettes and vice versa.

System Date

The system date is automatically updated every time WP is run. If the system does not have a date, then the last date is retained until changed by the option "Change System Date".

SECTION 3
CORRECTED PROBLEMS

OVERVIEW

This section discusses problems with previous releases that have been corrected by Release 2.60.

CORRECTED PROBLEMS

When two or more users sent a document to a shared printer, Mixed printout was produced.

ERROR P55 was produced when you attempted a keyword search function in WP.

ERROR P36 on line 2332 was produced when you exited from printing from the archive option.

ERROR X74 on line 340 was produced when you attempted to disply an archive index with the archive location blank.

ERROR X74 was produced when you attempted to file a document with the archive location blank.

The Print document index option used to carry the printout of page one onto the second page.

SECTION 4
SPECIAL CONSIDERATIONS

OVERVIEW

This section discusses special considerations associated with Release 2.60.

SPECIAL CONSIDERATIONS

CS/2200 WP is supported on printers requiring printer drivers. However, due to large differences with the printers' proportional line feed option, i.e., 1/4, 1/8, etc. the CS/2200 WP is not supported at the present time. It is very important that when you select the driver-dependent printer, you use the device type, 7xy, when setting the defaults for the printer. Failure to do so may result in the printing of unwanted characters and printout over the same line. Driver-dependent printers always use the type, character, in the Print Menu selection.

Due to restrictions on the PM018 Printer, single sheet printing is supported only for print in foreground print mode via screen acknowledge for each sheet.

When using the sheet feeder with the PM018 printer, the bold print mode does not function.

SECTION 5
SOFTWARE INSTALLATION

OVERVIEW

This section discusses how to install this release of the software.

SYSTEM UPDATE INSTALLATION INSTRUCTIONS

Create a backup of your system before installing this release. This is for your protection. Should anything happen during the installation procedure you may be required to recover from this backup to make your system operational.

Wang Laboratories takes no responsibility for changes made to the standard WP software by the user. This update procedure will overlay all the WP programs, except the one named 'START', without operator intervention. See step five (5) for special instructions.

The installation of the maintenance release is performed by:

1. Do a backup of your system.

2. Mount diskette number one (1).

3. Enter SELECT DISK XXX (XXX is disk with new software).

4. Enter LOAD RUN "WPINSTLL".

5. Enter the information as it is requested on the screen. Select Copy Programs and System Data Files, Copy and Verify, Replace All Files and press EXEC to begin processing.

   Note that the WP 'START' program will be moved from the last diskette and the system will stop and ask the operator if the program should be replaced.

6. If your installation has a customized (special) start-up program, you should answer this question with 'N' (no).

7. After the successful installation, the message "All software is now installed and updated" will appear on the screen. If the installation required more space, the number of 'junk' files will be reported. The junk files have the name 'JUNKxxx' where xxx is a sequence number.

When this procedure has been successfully completed, your system will contain the new system and the WP menu message will be "Release 2.6.0". Please check your menu message and if it is not correct restore from your backup and restart the procedure at step 2. If it fails to replace the message a second time, please restore from your backup and contact your WANG customer service representative.

4. Enter LOAD RUN "WPINSTLL".

5. Enter the information as it is requested on the screen. Select Copy Programs and System Data Files, Copy and Verify, Replace All Files and press EXEC to begin processing.

   Note that the WP 'START' program will be moved from the last diskette and the system will stop and ask the operator if the program should be replaced.

6. If your installation has a customized (special) start-up program, you should answer this question with 'N' (no).

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When this procedure has been successfully completed, your system will contain the new system and the WP menu message will be "Release 2.6.0". Please check your menu message and if it is not correct restore from your backup and restart the procedure at step 2. If it fails to replace the message a second time, please restore from your backup and contact your WANG customer service representative.

2200 WP PASSWORDS

1) To obtain the VOLUME PASSWORD of 2200 document you merly go into the VOLUME CATALOGUE found under the UTILITIES MENU. Select VOLUME CATALOGUE and you will then get a listing of all the volumes. Hit SHIFT HALT and type in :PRINT STR(U1$(),1,256) and return. The result will be all the associated passwords for each volume.

```
                        Volume Name     Disk Unit

                         2200             D12
                         DUANEWP          D35
                         GREGWPVL         D22
                         JODISIS2         D35
                         KEN              D35
                         LEEWPVOL         D12
                         MAILLOUX         D35
                         MORIN            D35
                         ROGERS           D20
                         VOLUME A         D21
                         VOLUME S         D21

:PRINT STR(U1$(),1,256)          NAME OF VOLUME   PASS-WORD

2200          DUANEWP          GREGWPVL xxxxxxxxJODISIS2        KEN
LEEWPVOL      MAILLOUX         MORIN            ROGERS          VOLUME A
VOLUME S      ##################################################################
################

:
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