

VS Software Bulletin #5

Release 5.0



VS Software Bulletin #5

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PREFACE

This Software Bulletin describes the changes and additions made to the VS Operating System for Release 5. Only those operating system features that are new since Release 4.02 (the existing field release) are described in this document.

This document summarizes the differences only. Explanations and operating instructions will be included in revisions, addendums, and new VS manuals, as follows.

VS ADMS Concepts and Facilities (800-1111AC-01)

VS ADMS Design and Implementation Guide (800-1112AD-01)

VS ADMS Release Bulletin (800-3104-01)

VS ADMS Utilities Reference (800-1310AU-01)

VS Batch Communications User's Guide (800-1305BC-01)

VS COBOL Reference (800-1201CB-04)

VS COBOL Reference Addendum (800-1201CB-03.01)

(This addendum only documents the COBOL support of ADMS. It will only be available as an interim document until the revision to the manual is released.)

VS/IIS Operator's Guide Addendum (800-1109WO-01.01)

VS/IIS Supervisor's Procedures Addendum (800-1110WS-01.01)

VS/IIS 5548z Typesetter Operating Instructions (800-1501TO-01)

VS Operating System Services Addendum (800-1107OS-02.02)

VS Procedure Language Reference (800-1205PR-03)

VS Program Development Tools (800-1307PT-01)

VS Programmer's Guide to VS/WP (800-1304PW-03)

VS Programmer's Introduction (800-1101PI-05)

VS System Operation Guide (800-1102SO-06)

VS 3270 Emulation User's Guide Addendum (800-1306EM-01.01)

VS Teletypewriter Emulation (TTY) User's Guide (800-1314TU-01)

VS Utilities Reference Addendum (800-1303UT-02.01)

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INTRODUCTION

Release 5 contains several new features and functional improvements over previous releases of the VS Operating System. The major changes are the following.

COMMAND PROCESSOR

The Command Processor Main menu has been slightly changed to account for the combination of two commands, SHOW DEVICE STATUS and MOUNT/DISMOUNT VOLUMES, into one, MANAGE DEVICES. The new command also includes several new options which let the user easily perform functions such as changing mount restrictions and modifying work and spool file eligibility. The Command Processor menu also contains a new command, ENTER WORD PROCESSING. These features are all documented in "The Command Processor" section of this bulletin and in the VS Programmer's Introduction.

OPERATOR'S CONSOLE

Release 5 features a new Operator's Console menu. All devices are now displayed and controlled through separate Program Function keys (PF9 through PF13). In addition, the PRINT I/O ERROR LOG command, formerly activated by PF8, is now included in PF14 (SYSTEM OPTIONS). PF14 also displays system parameters and allows the user to set eight workstations as dual operator/user mode workstation. Release 4 allowed the user to set a maximum of four workstations as dual operator/user mode workstations. These changes are documented in "The Operator's Console" section of this bulletin and in the VS System Operation Guide.

WORD PROCESSING

The new release of VS word processing (1.02.00) has a number of enhancements. On all combined workstations, the Command Processor has the added function PF9, ENTER WORD PROCESSING. When this key is pressed, the word processing software is immediately run and the Word Processing menu displayed. The Word Processing menu has been altered. The Telecommunications option has been eliminated. In its place is a Terminate Word Processing option, which returns the user to either the Command Processor or the Logon menu, depending upon the user's Logon restrictions. In addition, several major changes have been made to the VS word processing software; these are introduced in the "Word Processing" section of this bulletin and documented in the VS/IIS Operator's Guide Addendum and the VS/IIS Supervisor's Procedures Addendum.

PROCEDURE LANGUAGE

The Procedure Language Interpreter for VS Release 5 has been enhanced to include two new statements: PRINT and SUBMIT. Additionally, the SET statement now includes three new keywords, the CODE clause of the RETURN statement has been enhanced, and the DISMOUNT statement syntax has been modified. These changes are summarized in the "Procedure Language" section of this bulletin and in the VS Procedure Language Reference.

UTILITIES

Modifications have been made to some of the general system utilities (BACKUP, COPYWP, and DISKINIT), and new utilities (ADMSSBACK, COMPRESS, IBMCOPY, RECOVERY, and VERIFY) have been provided. The operating instructions for these utilities are documented in the VS Utilities Reference Addendum and the VS ADMS Utilities Reference. Modifications have also been made to the program development tool utilities (EDITOR and LINKER) and the DEBUGGER. These are described in the VS Program Development Tools manual.

ADMS

Release 5 of the VS Operating System includes a powerful set of extensions to the Data Management System (DMS).. This set of extensions, called the Advanced Data Management System (ADMS), offers DMS users a variety of functions normally found only in data base management systems. The new functions are implemented as extensions to the existing file-oriented data access functions supported by DMS, so that converting from a DMS environment to an ADMS environment is significantly easier and faster than converting to a data base environment. The major new features of ADMS are summarized below.

Centralized Data Definition -- Under ADMS, all data elements used for a particular application are defined through a special utility rather than by the application programs themselves. These data definitions are stored in one central location, where they can be easily controlled and modified. Individual programs are granted access only to those data elements required for program processing. In this way, control over application data is centralized and maintenance of both data descriptions and application programs is simplified.

- . Advanced File Sharing -- New file sharing features (also available under DMS) provide greater versatility in the manipulation of shared files. These features include the ability to hold multiple resources (including a range of records within a file, an entire file, and multiple files); an option to hold resources all at once or on an as-needed basis; and a timeout option which enables a program to branch to a designated routine if needed resources are not available in the time specified.

- . Transaction Processing -- ADMS permits the programmer to accurately reflect actual business processing procedures by defining "transactions" that logically group related updates to the data files. Most importantly, the ADMS recovery system recovers all completed transactions following any type of system failure. Because only completed transactions are recovered, the problem of inconsistent updates to related data files is avoided.
- . Automated Data Recovery -- ADMS provides an option to automatically audit all transactions to the data files. The log of updates thus created is used to recover data lost due to program or system failure. Because the auditing process can be carried out automatically by ADMS for all programs in the application, individual programs need not contain special logic to log updates. If the auditing option is selected, ADMS also ensures that all data files are recovered to a consistent state following a failure. As part of its recovery facilities, ADMS provides special utilities to perform data base recovery and to back up a data base. In addition, there is optional support for program-specific restart procedures.

Functions and facilities provided by ADMS are documented in the following manuals:

The VS ADMS Concepts and Facilities manual provides an overview of ADMS and briefly discusses its several components.

The VS COBOL Reference Manual Addendum documents extensions to the COBOL language which support the new ADMS functionality.

The VS ADMS Utilities Reference Manual provides operating instructions and general information on three new ADMS utilities: DDP, RECOVERY, and ADMSBACK.

The VS ADMS Design and Implementation Guide discusses system configuration requirements and recommendations for ADMS and data base design considerations under ADMS.

The VS ADMS Release Bulletin describes special considerations for ADMS.

OPERATING SYSTEM

Release 5 of the VS Operating System incorporates enhancements in the following areas: the Archiving Workstation, telecommunications abilities, additional system-wide information such as the system paging library name, the diskette device number, the CPU model name, and the A/C line frequency, task-related information such as the job name, and user-default information such as procedure queue (Run or Hold), job class (A-Z), and job limit (CPU time allowed), in addition to control of a larger range of device types. Additions and revisions to macroinstructions and SVCs which affect the VS Operating System Services manual include: CHECK, CXT, DISMOUNT, EXTRACT, MOUNT, OPEN, SET, START, UFBGEN, and XIO, as well as a revised description of the UNLINK SVC. These are documented in an addendum to the VS Operating System Services manual.

TELECOMMUNICATIONS

Release 5 of the VS Operating System now supports the following telecommunications options.

- . 3270 Emulation

The 3270 Emulator is an optional software product available for VS systems.

For 3270 Emulator versions prior to Version 3.0.0, general information about the Emulator, details about the hardware and software required for Emulator support, Emulator initialization and operation procedures, and information for programmers writing procedures for automated initialization of the Emulator has been included in the previously issued VS 3270 Emulation User's Guide (800-1306EM-01).

For 3270 Emulator version 3.0.0, an Addendum (800-1306EM-01.01) to the User's Guide is being issued. Refer to the "Telecommunications Information" section of this bulletin for further details on the software.

- . Batch Communications

Several GETPARM changes introduced in TCCOPY Version 4.3.0 may affect procedures written for earlier versions. Refer to the section "Telecommunications Information" in this bulletin. Corrections to TCCOPY and VSCOPY are listed in the section "Corrected Software Problems" under Telecommunications Corrections. Earlier versions of TCCOPY and VSCOPY were documented in VS Data Communications User's Guide (800-1302DC). Latest versions of TCCOPY and VSCOPY are documented in VS Batch Communications User's Guide.

- . Teletypewriter Emulation

The new optional telecommunication software program TTY is described in VS Teletypewriter Emulation (TTY) User's Guide.

NEW DEVICES

Release 5 of the VS Operating System supports several new models of workstations. Two models of Archiving Workstations are available: 2266S and 2266C. These workstations come with a separate diskette drive which can be used for data processing, file copying and retrieving, and for word processing document archiving and retrieving. Three diskette options are offered with the 2266S and two options are offered with the 2266C; Table 1 lists those combinations.

Table 1. Archiving Workstation and Diskette Combinations

Model	Description
2266S-1	308-Kilobyte Serial Archiving Workstation (AWS) for hard-sectored diskettes
2266S-2	616-Kilobyte Serial AWS for soft-sectored diskettes
2266S-3	1.23-Megabyte Serial AWS for hard- and soft-sectored diskettes
2266C-1	308-Kilobyte Serial AWS with word processing capability, for hard-sectored diskettes
2266C-3	1.23-Megabyte Serial AWS with word processing capability, for hard- and soft-sectored diskettes

When used with the new IBMCOPY utility, the drive can be used to read and write IBM-formatted diskettes. 3740-type diskettes can be used on this drive. IBM BASIC or type H data exchange formats are supported. The different models of the drive support hard- and/or soft-sectored diskettes, single- or double-sided with single- or dual-density. The workstation models available as archiving workstations are like the 2246 serial or 2246C combined workstations.

A typesetter is also available. The typesetter must be used with word processing software and can only be used for word processed documents.

Further information about these devices can be found in the "New Devices" section of this bulletin, in the VS System Operation Guide, and in the VS/IIS 5548 Typesetter Operating Instructions manual.

THE COMMAND PROCESSOR

The Command Processor is slightly changed in Release 5 of the VS Operating System. Two commands are added and the main and modified Command Processor menus are altered to accommodate them.

MAIN AND MODIFIED COMMAND PROCESSOR MENUS

The Command Processor main menu is illustrated in Figure 1. The two commands that do not appear in the previous operating system release are MANAGE DEVICES and ENTER WORD PROCESSING.

MANAGE DEVICES is associated with PF6. It replaces and incorporates the functions of the MOUNT/DISMOUNT VOLUMES command and the SHOW DEVICE STATUS command. Refer to the "Managing Devices" section for a description of the new command.

ENTER WORD PROCESSING, associated with PF9, appears on a combined workstation if you have the word processing software package. (ENTER WORD PROCESSING does not appear on workstation number 0 even if it is a combined workstation.) The command allows you to run word processing on the VS directly from the main menu; it is no longer necessary to use the RUN command. PF9 now displays the word processing menu on the screen and makes all word processing functions available.

PF11 previously initiated the CONTROL PRINT/JOB QUEUES command on a nonoperator workstation. This command is now called MANAGE PRINT/PROCEDURE QUEUES and is associated with PF4. PF4 previously initiated the SHOW DEVICE STATUS command. PF11, on a dual-mode workstation, previously permitted entry to Operator's Console processing. This has not changed.

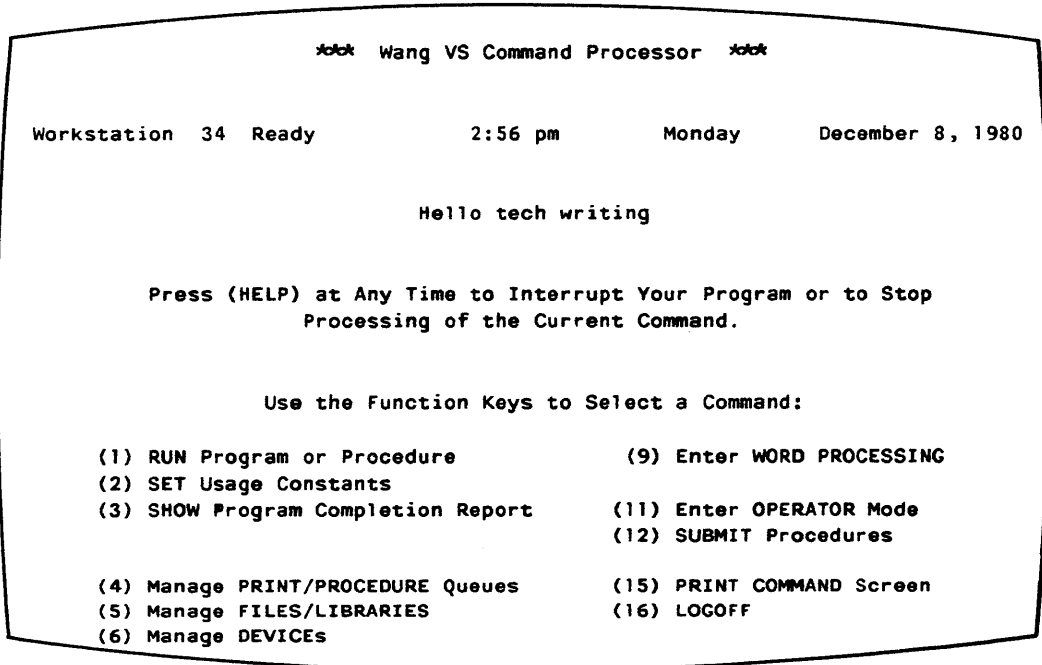


Figure 1. Command Processor Main Menu

The modified Command Processor menu contains the same changes as the main menu, except that ENTER WORD PROCESSING does not appear. All other commands remain unchanged. The changes to the Command Processor menus are summarized in Table 2.

Table 2. Command Processor Menu Changes

Function was Available Through	Function is Now Available Through
PF4 SHOW DEVICE STATUS	PF6 MANAGE DEVICES
PF6 MOUNT/DISMOUNT VOLUMES	PF6 MANAGE DEVICES
PF11 CONTROL PRINT/JOB QUEUES	PF4 MANAGE PRINT/PROCEDURE QUEUES
PF12 SUBMIT JOB	PF12 SUBMIT PROCEDURE
PF1 RUN PROGRAM OR PROCEDURE FILE=WP	PF9 ENTER WORD PROCESSING

MANAGING DEVICES

The **MANAGE DEVICES** command allows the user to view status information about all the peripheral devices on the system. This command also permits the user to mount and dismount disks and tapes and perform other device management functions. The way devices are now managed is similar to the way files and libraries are managed: by positioning the cursor and then selecting the appropriate PF key to perform the device management action.

Pressing PF6 from the main or modified Command Processor menu displays the Manage Devices menu, illustrated in Figure 2. From this screen, press the appropriate PF key to display information about a specific device type. The PF key for a particular device type does not appear unless that type of device is actually present on the system.

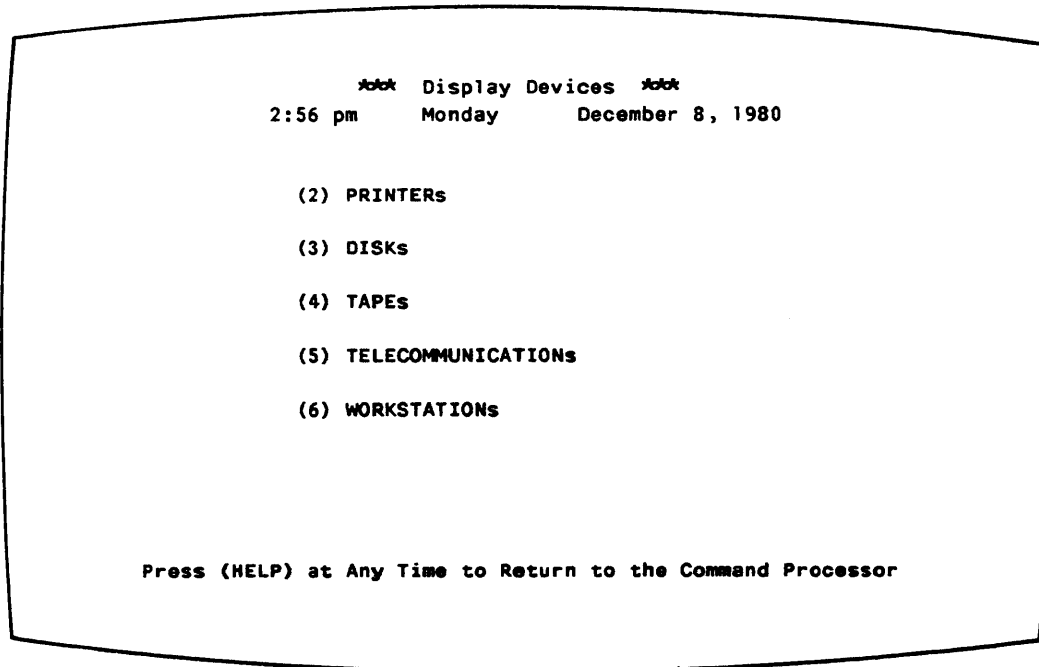


Figure 2. Manage Devices Menu

The user can reach the Manage Devices menu from any device screen by pressing PF1. To move from one device screen to another (for example, from the Disk menu to the Tape menu), the user must return to the Manage Devices menu and then proceed to the next device screen.

MANAGING PRINTERS

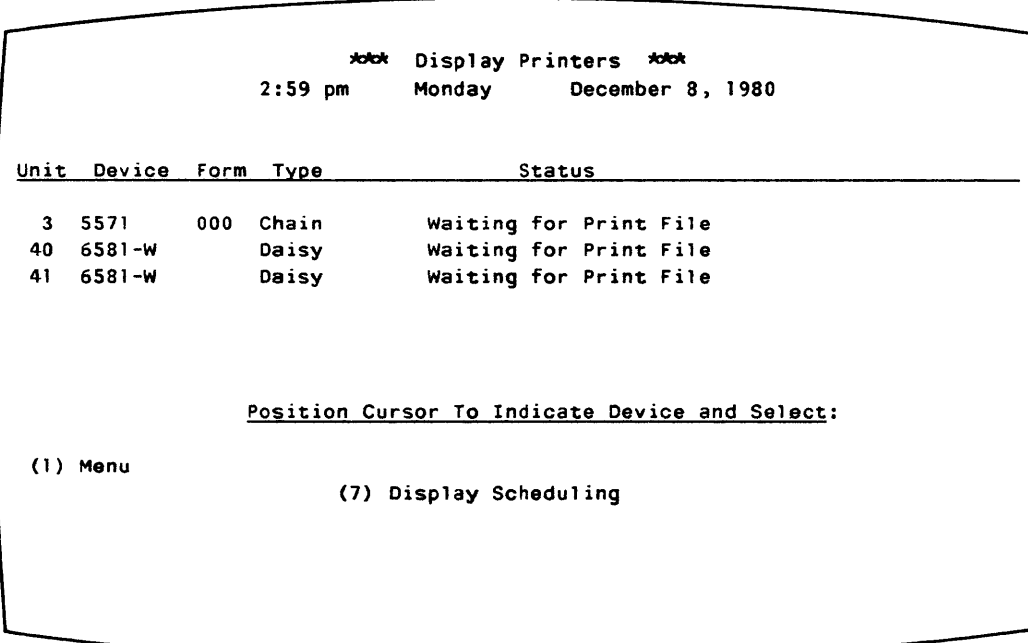
To reach the Printer screen, press PF2 from the Manage Devices menu. The Printer screen provides information about all local printers configured for the system and all remote printers which are currently connected. In Release 4, some of this information was available through the CONTROL PRINTERS command on the Operator's Console menu (i.e., Unit, Form, and Status). Now this information is available through both the Command Processor and the Operator's Console.

The information on the Printer screen is listed in the order of the unit number (device address). The following information is provided for all printers:

- . Unit number (device address)
- . Device model number
- . Currently mounted form number
- . Printer type -- matrix, band, chain, image, daisy, typesetter
- . Status -- detached, idle, released, waiting, printing

If a printer is released, its owner's user ID and/or job name appear. If the printer is printing, the submitter's file name, library, volume, and user ID are displayed. If there is a problem with the printer (for example, forms not mounted), the Status field blinks.

Figure 3 is an example Printer screen. Note that the bottom of the screen lists a Display Scheduling command. This command displays a list of scheduling information; this information (which has not changed since the previous release) is not modifiable and is described in the VS System Operation Guide.



```

          **** Display Printers ****
          2:59 pm   Monday   December 8, 1980

Unit Device Form Type           Status
-----
  3  5571   000  Chain      Waiting for Print File
 40  6581-W         Daisy      Waiting for Print File
 41  6581-W         Daisy      Waiting for Print File

          Position Cursor To Indicate Device and Select:

(1) Menu

          (7) Display Scheduling

```

Figure 3. A Sample Printer Screen

MANAGING DISKS

To reach the Disk screen, press PF3 from the Manage Devices menu. The Disk screen provides information about all the disk units configured for the system. Most of this information previously appeared on the Show Device Status command screen; only Capacity and Restrictions are new. The current user's ID now appears on the Owner Information screen (refer to the following explanation).

The information on the Disk screen is listed in the order of the unit number (device address). The following information is provided for all disk devices:

- . Unit number
- . Device model number
- . Capacity in megabytes or kilobytes
- . Platter type -- removable, fixed, or diskette

If a volume is mounted on the unit, the following additional information appears:

- . Volume name
- . Restrictions -- removal, write protection, or exclusive use
- . Number of open files
- . Any status other than Ready

Figure 4 is an example Disk screen. Note that the bottom of the screen contains a list of the commands available to control disks and the PF keys associated with them. These are described in the following sections.

*** Control Disks ***
2:56 pm Monday December 8, 1980

<u>Unit</u>	<u>Device</u>	<u>Capacity</u>	<u>Type</u>	<u>Volume</u>	<u>Restrictions</u>	<u>Open Files</u>	<u>Status</u>
16	2265V-1	75 Mb	Rem	A40259		0	
17	2265V-1	75 Mb	Rem	VOL444		63	
18	2265V-2	288 Mb	Rem	SYSTEM		18	
19	2265V-2	288 Mb	Rem	WORK		5	
23	2270V	315 Kb	Dsket				

Position Cursor To Indicate Device and Select:

(1) Menu	(6) Mount	(10) Change Restrictions
	(7) Dismount	(11) Owner Information

Figure 4. A Sample Disk Screen

The MOUNT Command

To logically mount a volume on a disk unit, move the cursor to the line describing the unit and press PF6. Fixed/removable disk combinations are described on two lines; move the cursor to the appropriate line of the description.

Next, the Mount Disk screen, illustrated in Figure 5, appears. Notice that the screen format is different from the one in the previous operating system release, but that most of the information you need to supply is the same. The device number or volume type no longer needs to be provided. The following parameters must be supplied.

- . Volume name
- . Label type -- No Label is valid only for diskettes; Standard Label is the default
- . Mode -- Shared is the default
- . Allow work files? -- choose yes or no; no is the default
- . Allow spool files? -- choose yes or no; no is the default

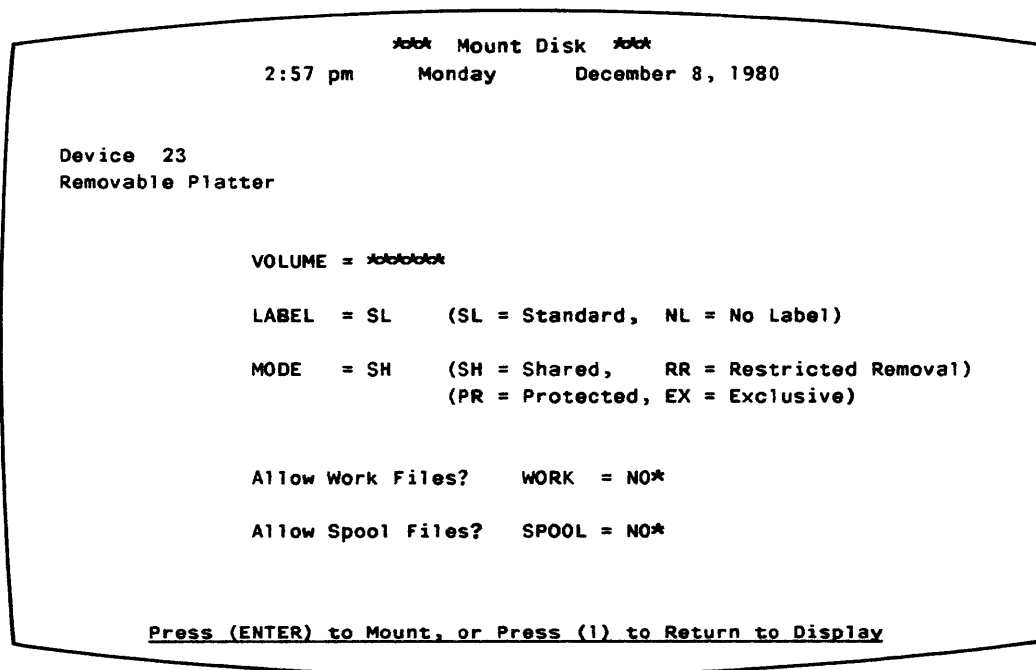


Figure 5. Mount Disk Screen

Press ENTER to initiate a logical mount and the system will prompt you to physically mount the disk. Or, press PF1 to cancel the mount and return to the Disk screen.

The DISMOUNT Command

When logically dismounting a volume, there is no longer a GETPARM prompt. Simply move the cursor to the line that describes the volume, and press PF7. The volume name will blink. Verify that this is the volume to be dismounted; then, press ENTER to initiate a logical dismount. The system will prompt for the volume to be physically dismounted. Or, press PF1 to cancel the dismount and return the screen to its normal state.

The CHANGE RESTRICTIONS Command

This command modifies the mount restrictions. To change these restrictions for a specific volume, move the cursor to the entry for that volume, and press PF10. The system highlights the Restriction column and allows an entry to be typed over the present restriction. Type one of the following restrictions:

- . Shared
- . Removal (restricted removal)
- . Protected
- . Exclusive

These choices are listed at the bottom of the screen. The command accepts any unique, leading substring, and a blank restriction is equivalent to Shared.

Press ENTER to effect the change, or press PF1 to cancel the command and return the screen to its original state.

The OWNER INFORMATION Command

To receive information about the volume owners, press PF11. A volume owner is the user who mounted the volume.

Owner Information displays the following data in the right-hand columns of the screen, as illustrated in Figure 6.

- . Owner's user ID and/or its job name (the Proc-ID is the name of the submitted job which issued the Mount request); this is supplied unless the volume is mounted for initialization or is a No Label (NL) volume
- . Volume's eligibility for work file and/or spool file allocations

* * * * Control Disks * * * *							
2:58 pm		Monday		December 8, 1980			
Unit	Device	Capacity	Type	Volume	User	Proc-ID	Spool Work
16	2265V-1	75 Mb	Rem	A40259			NO NO
17	2265V-1	75 Mb	Rem	VOL444	SYSTEM		YES YES
18	2265V-2	288 Mb	Rem	SYSTEM			NO NO
19	2265V-2	288 Mb	Rem	WORK			NO NO
23	2270V	315 Kb	Dsket				

Position Cursor To Indicate Device and Select:

(1) Menu	(6) Mount	(10) Change
	(7) Dismount	(11) Status Information

Figure 6. Owner Information Screen -- Disk

The Owner Information screen also makes two additional commands available: CHANGE and STATUS INFORMATION.

The CHANGE Command

This command modifies work and spool file eligibility. To change these restrictions for a specific volume, position the cursor next to that volume's entry, and press PF10. The system highlights the Work and Spool columns and lets you change the entries. Type yes or no in the column you wish to change. Then, press ENTER to effect the change, or press PF1 to cancel the command and return the screen to its original state.

The STATUS INFORMATION Command

Owner data replaces the mount restrictions, number of open files, and status information that appears on the Disk screen. To return to the Disk screen and its information, press PF11 from the Owner Information screen.

MANAGING TAPES

To reach the Tape screen, press PF4 from the Manage Devices menu. The Tape screen provides information about all the tape units configured for the system. Most of this information previously appeared in the Show Device Status command screen; only the Device Type (now number of tracks) and Tape Label are new. The current user's ID now appears on the Owner Information screen (see following explanation).

The information is listed in the order of the unit number (device address). The following information is provided for all tape devices:

- . Unit number (device address)
- . Device model number
- . Device type (9-track or 7-track dual density (DD) or single density)

If a volume is mounted on the unit, the following additional information appears:

- . Volume name
- . Tape label (AL = ANSI Label, NONE = No Label, IL = IBM Label)
- . Tape density
- . Any status other than Ready

Figure 7 is an example Tape screen. Note that the bottom of the screen contains a list of the commands available to control tapes and the PF keys associated with them. These are described in the following sections.

* * * * Control Tapes * * * *
2:58 pm Monday December 8, 1980

<u>Unit</u>	<u>Device</u>	<u>Type</u>	<u>Volume</u>	<u>Label</u>	<u>Density</u>	<u>Status</u>
28	2209V-2	9-Track-DD				
29	2209V-3	7-Track				

Position Cursor To Indicate Device and Select:

(1) Menu	(6) Mount	(11) Owner Information
	(7) Dismount	

Figure 7. A Sample Tape Screen

The MOUNT Command

To logically mount a volume on a tape unit, move the cursor to the line describing the unit, and press PF6. The Mount Tape screen, illustrated in Figure 8, appears. Notice that the screen format is different from the one that appears in the previous release, but that most of the information required is the same. The device number or volume type no longer needs to be provided. Supply the following parameters:

- . Volume name
- . Label type -- AL (ANSI) is the default
- . Mode -- Exclusive is the default

```
          **** Mount Tape ****
          2:58 pm   Monday   December 8, 1980

Device 28

          VOLUME = ****

          LABEL = AL   (AL = ANSI,  NL = No Label,  IL = IBM)

          MODE   = EX   (EX = Exclusive,  SH = Shared)

Press (ENTER) to Mount, or Press (1) to Return to Display
```

Figure 8. Mount Tape Screen

Press ENTER to initiate a logical mount and the system will prompt for the tape to be physically mounted. Or, press PF1 to cancel the mount and return to the Tape screen.

The DISMOUNT Command

When logically dismounting a volume, a GETPARM screen is no longer displayed. Simply move the cursor to the line that describes the volume and press PF7. The volume name will blink. Then, press ENTER to initiate a dismount; the system will prompt for the tape to be physically dismounted. Or, press PF1 to cancel the dismount and return the screen to its normal state.

The OWNER INFORMATION Command

To receive information about the volume owners, press PF11. The Owner Information screen presents the following information in the screen's right-hand columns, as illustrated in Figure 9.

- . Restrictions -- Exclusive or Shared
- . Owner's user ID -- if applicable, the name of the workstation user
- . Proc-ID -- if applicable, the name of the submitted job

```

          *~*~* Control Tapes *~*~*
          2:58 pm   Monday   December 8, 1980

Unit Device      Type      Volume  Restrictions  User      Proc-ID
-----
28  2209V-2      9-Track-DD
29  2209V-3      7-Track

          Position Cursor To Indicate Device and Select:

(1) Menu
          (6) Mount
          (7) Dismount
          (10) Change Restrictions
          (11) Status Information

```

Figure 9. Owner Information Screen -- Tape

The Owner Information screen also makes two additional commands available. These commands, CHANGE RESTRICTIONS and STATUS INFORMATION, are described below.

The CHANGE RESTRICTIONS Command

This command modifies the mount restrictions. To change these restrictions, press PF16 from the Owner Information screen. Type one of the following restrictions in the Restrictions column on the appropriate line:

- . Shared
- . Exclusive

The command accepts any unique, leading substring, and the default is Shared.

Press ENTER to effect the change, or press PF1 to cancel the command and return the screen to its original state.

The STATUS INFORMATION Command

This command causes owner data to replace the label, density, and status information presented on the Tape screen. To return to the Tape screen and its information, press PF11 from the Owner Information screen.

MANAGING TELECOMMUNICATIONS DEVICES

To reach the Telecommunications (TC) screen, press PF5 from the Manage Devices menu. The Telecommunications screen provides information about all TC units configured for the system including all remote devices connected by telecommunication lines, as illustrated in Figure 10. Some of this information previously appeared in the Show Device Status command screen (unit number and status); the rest appeared in the Remote Devices screen of the Operator's Console CONTROL DEVICE STATUS command.

The information on the Telecommunications screen is listed in the order of the unit number (device address). The following information is provided for all TC devices:

- . Unit number (device address)
- . Device model number
- . Line name
- . Polling address
- . Status

If the unit currently has no device associated with it, the Type column lists it as available. If the device is a remote workstation, the Status column contains the associated task's user ID, if a user is logged on.

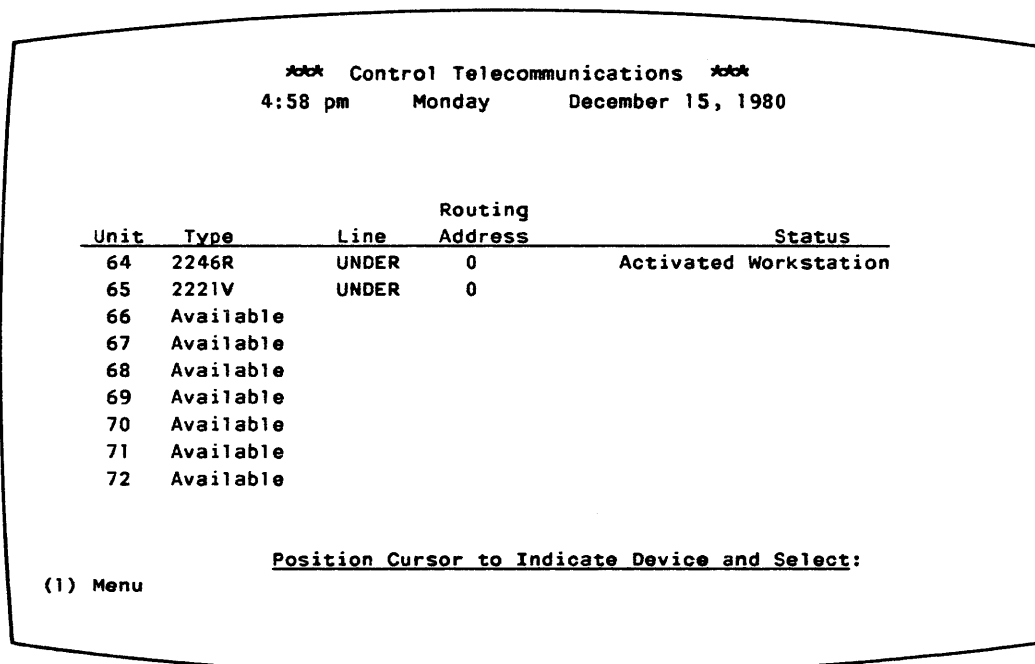


Figure 10. A Sample Telecommunications Screen

MANAGING WORKSTATIONS

To reach the Workstation screen, press PF6 from the Manage Devices menu. The Workstation screen provides information about all local workstations that are configured for the system and all remote workstations that are currently connected. Most of this information previously appeared in the Show Device Status command screen; only the name is new. This information is listed in the order of the unit number (device address).

The unit number and device model number appear for all workstations; additional information appears in the following specific cases:

- . Status information - appears for any unit that is not ready.
- . User ID - appears if the user is logged on.
- . User name - appears if the user is logged on.
- . Status - Operator appears in the Status column if the workstation is being used as Operator's Console. Disconnected appears as the status if the workstation is powered-down. A blank status field indicates that the workstation is ready.

Figure 11 is an example Workstation screen.

The screenshot shows a terminal window titled "Display Workstations" with a timestamp of 2:59 pm on Monday, December 8, 1980. Below the title is a table with five columns: Unit, Device, User, Name, and Status. The table lists 11 workstations (Unit 0 to 10). Units 0-5 have users and names listed. Units 6 and 8 are marked as "Disconnected". Units 9 and 10 have users and names listed. Below the table is a legend for navigation: (1) Menu, (3) Last, and (5) Next. A note at the bottom says "Position Cursor To Indicate Device and Select:".

Unit	Device	User	Name	Status
0	2246C	ABC	tech writing	
1	2246C	TM	Tom	Operator
2	2246C	SHR	SHARER	
4	2246C	SAL	Sally	
5	2246C	RWL	Rick	
6	2246C			Disconnected
7	2246C			
8	2246C			Disconnected
9	2246C	SKH	Susan	
10	2246C	LPK	Leonard	

Position Cursor To Indicate Device and Select:

(1) Menu
(3) Last
(5) Next

Figure 11. A Sample Workstation Screen

THE OPERATOR'S CONSOLE

The Operator's Console menu (shown in Figure 12) has been modified in this release of the VS Operating System. A major difference between the Operator's Console menus in Release 4 and Release 5 is that PF keys 9 through 13 are now used to control and display the status of printers, disk drives, tape drives, telecommunications devices, and workstations. Additionally, by using PF14 (CONTROL SYSTEM STATUS), the user may now set eight workstations as dual operator/user workstations. In Release 4, only four workstations could be designated as dual workstations. Table 3 shows the changes in function of the PF keys on the Operator's Console menu.

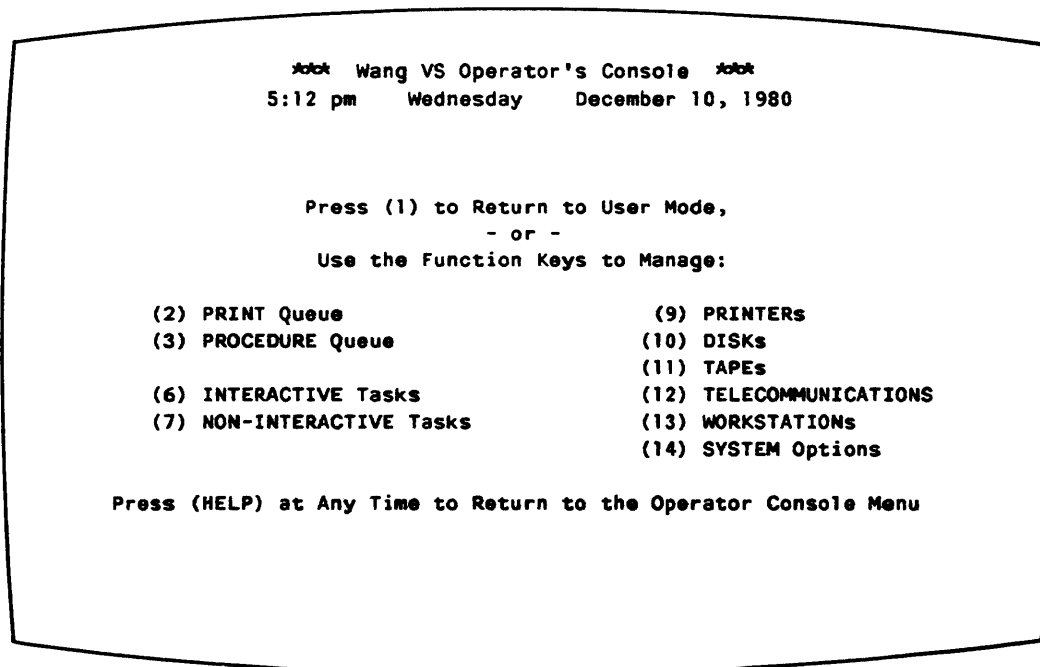


Figure 12. Operator Console Menu

MANAGING THE PRINT QUEUE

The function of print queue management is the same on Release 4 and Release 5. However, the name of the Operator's Console command, DISPLAY AND CONTROL PRINT QUEUE in Release 4 differs from the command name on Release 5, PRINT QUEUE.

Table 3. Functional Modifications of VS Operator's Console

Function was Available Through		Function is Now Available Through	
PF2	DISPLAY AND CONTROL PRINT QUEUE	PF2	PRINT QUEUE
PF3	CONTROL PRINTER(S)	PF9	PRINTERS
PF4	CONTROL JOB QUEUE ENTRIES (Batch Jobs)	PF3	PROCEDURE QUEUE
PF5	CONTROL JOB PROCESSING TASKS (Background Jobs)	PF7	NON-INTERACTIVE TASKS
PF6	CONTROL INTERACTIVE TASKS (User Jobs)	PF6	INTERACTIVE TASKS
PF7	CONTROL DEVICE STATUS	PF9	PRINTERS
		PF10	DISKS
		PF11	TAPES
		PF12	TC
		PF13	WORKSTATIONS
PF8	PRINT I/O ERROR LOG	PF14	SYSTEM STATUS
PF9	CONTROL SYSTEM STATUS	PF14	SYSTEM STATUS

MANAGING THE PROCEDURE QUEUE

The function of job queue management is the same on Release 4 and Release 5. However, the job queue is now referred to as a procedure queue.

MANAGING INTERACTIVE AND NONINTERACTIVE TASKS

Noninteractive or background job tasks are still managed by the operator in the same way, but the command name is changed. The new Operator's Console command is named NON-INTERACTIVE TASKS. There is no change in interactive task management.

CONTROLLING DEVICE STATUS

The new device status commands allow all the devices within a category to be managed. By merely positioning the cursor next to the appropriate device on the device screen and pressing a PF key, the user can now mount and dismount, attach and detach, and change restrictions and owners. Previously, these functions had to be performed from the Command Processor or through several steps in CONTROL DEVICE STATUS. Information about each device type can be displayed from the Operator's Console by selecting the appropriate PF key (PF9 - PF13) or from the Command Processor by selecting MANAGE DEVICES (PF6). For an explanation and illustration of each of the device management screen formats, refer to "The Command Processor" section.

Most device management functions can be executed from both the Command Processor and the Operator's Console. ATTACH and DETACH and the telecommunications commands, ACTIVATE, DEACTIVATE, and CHANGE, appear only on the Operator's Console menu; all the other device management commands appear on both menus. ATTACH and DETACH can be executed for printers, disks, tapes, and telecommunications devices.

The ATTACH and DETACH Commands

ATTACH connects an entire device (not just a volume) to the system; DETACH disconnects it. To logically attach or detach a unit, move the cursor to the line that describes the unit, and press PF8 to attach or PF9 to detach. Fixed/removable combinations are described on two lines; move the cursor to either line of the description.

The unit name will blink. Then, press ENTER to initiate a logical attach or detach, or press PF1 to cancel the command and return the screen to its normal state.

Controlling Printers

The PRINTERS command provides information about all local printers configured for the system and all remote printers that are currently connected. Some of this information previously appeared from the Operator's Console menu CONTROL PRINTERS command. To reach the Printer screen, press PF9 from the Operator's Console menu.

The Printer screen and its associated commands are explained and illustrated in "Managing Printers" in "The Command Processor" section.

Controlling Disks

The DISKS command provides information about all the disk units configured for the system. Much of the information previously appeared on the Show Device Status command screen. To reach the Disk screen, press PF10 from the Operator's Console menu.

The Disk screen and its associated commands are explained and illustrated under "Managing Disks" in "The Command Processor" section.

Controlling Tapes

The TAPES command provides information about all the tape units configured for the system. Much of this information previously appeared on the Show Device Status command screen. To reach the Tape screen, press PF11 from the Operator's Console menu.

The Tape screen and its associated commands are explained and illustrated under "Managing Tapes" in "The Command Processor" section.

Controlling Telecommunications

The TC command provides information about all telecommunications (TC) units configured for the system including all remote devices connected via TC lines. This information previously appeared in either the Show Device Status command screen or the Operator's Console Control Device Status command screen. To reach the Telecommunications screen, press PF12 from the Operator's Console menu.

The TC screen is explained under "Managing Telecommunications Devices" in "The Command Processor" section. Figure 13 illustrates the TC screen with all its associated commands; the commands are described in the following sections.

When the remote workstation is activated, use PF6 from the TC screen to activate the remote printer. Any valid printer type may be activated. These include Model 2221V, 2231V-1, 2231V-2, 2231V-6, 2263V-1, 2263V-2, 2263V-3, 2273V-1, and 2281V printers. (Refer to "Managing Printers" in "The Command Processor" section.)

When the remote workstation and printer are activated, a particular print type for the remote printer must be assigned. For example, using the printer scheduling option of the PRINTERS control on the Operator's Console, print classes A through C can be assigned to the local printer and classes D through Z to the remote printer. Then, if the print queue default is set to D through Z, the remote printer will print only the remote user's files. All local print files (A through C) will print on the local printer.

The DEACTIVATE Command

DEACTIVATE is valid only for an activated workstation or printer. It returns the device to inactive status; that is, the system still knows the device exists, but effectively removes the device from the system. DEACTIVATE destroys address space associated with a workstation or disconnects a printer from the spooling system.

To deactivate a device, move the cursor to the line describing the device, and press PF7. Before a workstation can be deactivated, the task associated with it must be logged off.

The CHANGE Command

This command is valid only for devices that are not currently active. It modifies line name, polling address, and/or device model number.

To change this data, press PF10. The system highlights the Line, Type, and Routing Address columns and lets the user type over the entries. Type the changes on the appropriate line in the desired column(s). Then, press ENTER to effect the change(s), or press PF1 to cancel the command and return the screen to its original state.

Controlling Workstations

The WORKSTATIONS command provides information about all local workstations that are configured for the system and all remote workstations that are currently connected. Most of this information previously appeared in the Show Device Status command screen.

The Workstation screen is explained and illustrated under "Managing Workstations" in "The Command Processor" section.

No commands are available for controlling workstations because workstations cannot be attached, detached, mounted, dismounted, or influenced in any other way. The operator's CONTROL INTERACTIVE TASKS command contains a menu for controlling sessions and users. To reach this menu, press PF6. For further discussion of that command, refer to the VS System Operation Guide.

CONTROLLING SYSTEM OPTIONS

SYSTEM OPTIONS, previously named CONTROL SYSTEM STATUS, allows you to print the I/O Error Log and to set eight, rather than just four, dual operator/user mode workstations. All other functions previously available through CONTROL SYSTEM STATUS remain as shown in Figure 14. PF14 replaces PF8 and PF9.

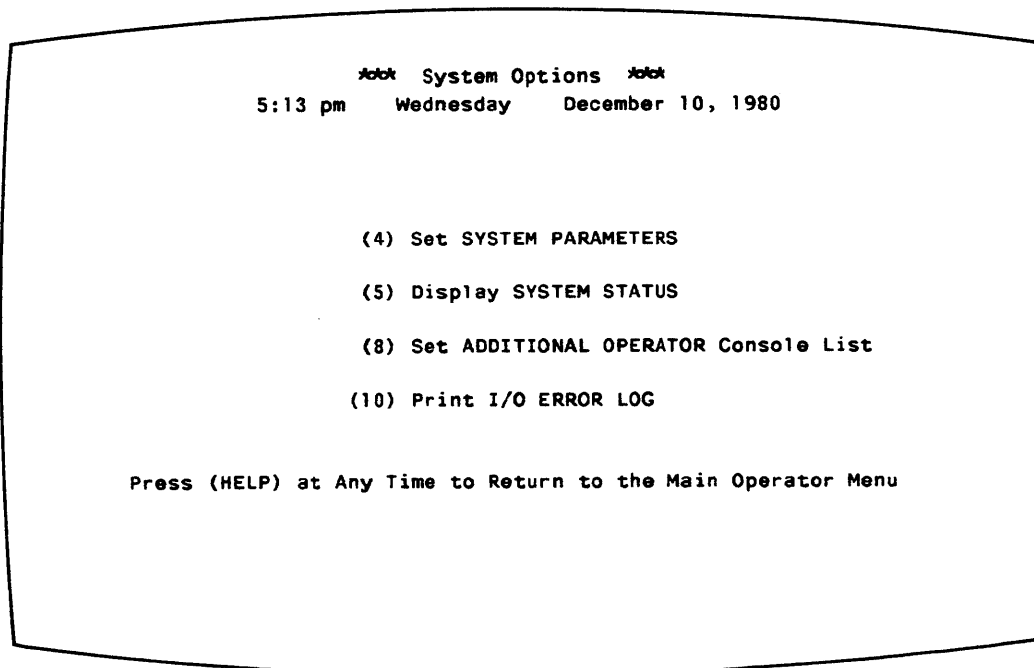


Figure 14. System Options Menu

WORD PROCESSING

ENHANCEMENTS

The new release of VS Word Processing software (1.02.00) has a number of enhancements. On all combined workstations, the Command Processor has the added function PF9, ENTER WORD PROCESSING, if word processing is installed on the system. When this key is pressed by the word processing supervisor or operator, the word processing software is immediately run and the Word Processing menu displayed. The Word Processing menu has been altered: the Telecommunications option has been eliminated. In place of the Telecommunications option is a Terminate Word Processing option, which returns the user to either the Command Processor or the Logon menu depending upon the user's Logon restrictions.

The following is a summary of other major changes made to the VS Word Processing software:

- . Document Filing is now fully supported by the VS. The central diskette drive, as well as the archiving workstation, can be used for filing purposes. All archiving and retrieving of documents from diskettes must be performed through Document Filing on the Word Processing menu. COPYWP, which was previously used for diskette filing, no longer supports this activity.
- . Word processing diskettes can now be mounted while in the word processing program by pressing COMMAND and SUBSCRIPT. Word processing diskettes may also be mounted from MANAGE DEVICES (PF6) on the Command Processor; however, they must all have the name ARCHIV, be nonlabeled, and be mounted for exclusive use.

NOTE

ARCHIV must be used as the volume name for diskettes mounted through Word Processing (except diskettes mounted in a local archiving unit by a user at the associated workstation). Since this name is reserved for word processing, it should not be used as the name of any disk used for purposes other than archiving.

- . When a user selects Utilities from the Word Processing menu, a new Utilities and Supervisory Functions menu is displayed. This menu contains the utilities and supervisory functions offered by previous releases of word processing, plus several new features discussed below.
- . The Sort Document utility offered to OIS users is now available on the VS via the Utilities and Supervisory Functions menu.
- . A new version of COPYWP is available. It can be accessed through the Utilities and Supervisory Functions menu or through the RUN command of the Command Processor. It contains the following features:
 - Document Copy
 - Document Rename
 - Document Delete
 - Document Merge
 - Library Copy
 - Library Rename
 - Library Delete
 - Reorganize Document
 - Reorganize Library
 - Connect Document to VS File
 - Connect VS File to Document
- . Programs may be run from the Utilities and Supervisory Functions menu without accessing the Command Processor.
- . The Recover Archive Diskette utility is now available from the Utilities and Supervisory Functions menu.
- . Duplicate Diskette, another function on the Utilities and Supervisory Functions menu, can now be performed from all combined workstations.
- . Bold printing is supported by the VS/IIS.
- . Typesetting is supported.
- . The Character Set Catalog utility CHAR enables the supervisor to specify character sets for a printer other than those which are standard on VS systems. This utility is also used in selecting character sets for the typesetter.

WORD PROCESSING CONVERSION NOTES

If a site intends to convert from a pre-Release 5 operating system with Word Processing to Release 5 with Word Processing, two programs must be run after installation of Release 5 to update the Word Processing software package. WPSDGEN is used to update the current WPSDATA file to Release 5 level. WPSDGEN can also be used to restore a damaged WPSDATA file. WPSDGEN preserves all users' default libraries and workstation defaults. Note, however, that all workstations which have a workstation number above 32 must have the workstation defaults (i.e., default library displayed in the Word Processing menu) reset. This has to be done only one time, after WPSDGEN is run, and the defaults will be set permanently. Once WPSDGEN is run, a second program, WPCVPROT, must be run to recreate the prototype document in each library. The following steps must be performed to update Word Processing to Release 5 level:

1. Ensure that IPL is performed on the system from the proper volume (i.e., the disk that contains the WPSDATA file and the document libraries -- usually the system disk). Inhibit all logons by pressing PF6 on the Operator's Console.
2. Run the WPCVPROT program. WPCVPROT will display no messages indicating successful program completion.
3. Run the WPSDGEN program through PF1 (RUN PROGRAM) of the Command Processor. There will be no messages indicating a successful completion of the program -- the user will be returned to the Command Processor menu.
4. Through PF6 on the Operator's Console, allow users to logon. Reset all workstation defaults at the individual workstations. Reset all library/volume defaults as needed.

PROCEDURE LANGUAGE

LANGUAGE ENHANCEMENTS

The Procedure Language Interpreter for the VS Operating System Release 5 has been enhanced to include two new statements: PRINT and SUBMIT. Additionally, the SET statement now offers three new keywords, the CODE clause of the RETURN statement has been enhanced, and the DISMOUNT statement syntax has been modified. These changes are summarized below, and are fully described in the revised version of the VS Procedure Language Reference (800-1205PR-03).

- . The PRINT statement enables a user to queue a print file into the print queue from within a procedure. The user can also specify the print class, status, form number, number of copies, and disposition of the print file.
- . The SUBMIT statement enables a user to queue a procedure into the procedure queue for execution on a noninteractive basis. With SUBMIT, the user can specify the procedure ID, job class, job status, CPU time limit for execution, action to be taken if the time limit is exceeded, and disposition for the submitted procedure. Additionally, the user can specify the conditions under which a dump is printed if the procedure terminates abnormally.
- . The SET statement now offers three new keywords by which the user can specify default parameters for procedures run noninteractively. These keywords are JOBQUEUE, JOBCLASS, and JOBLIMIT.
- . The CODE clause of the RETURN statement has been enhanced to enable the user to specify a series of step-label return code/integer values which can be summed into one CODE value. Previously, the user could add only one integer value to a step-label return code or integer.
- . The DISMOUNT statement syntax has been changed such that, when dismounting a tape volume, the keyword TAPE is required.

UTILITIES

OVERVIEW

Modifications have been made to some of the general system utilities (BACKUP, COPYWP, and DISKINIT), and new utilities (ADMSBACK, COMPRESS, IBMCOPY, RECOVERY, and VERIFY) have been provided. Modifications have also been made to the program development tool utilities (EDITOR and LINKER) and the DEBUGGER.

BACKUP UTILITY (MODIFIED)

The BACKUP utility has been modified for ADMS. BACKUP is used to backup DMS files. To backup ADMS files, the ADMSBACK utility must be used. BACKUP, while running against a volume that contains ADMS files, will display a reminder message to the user indicating that the ADMS files have not been backed up. For additional information, refer to the VS Utilities Reference Addendum.

COPYWP UTILITY (MODIFIED)

The COPYWP Utility, as well as the VS Word Processing software package, has been substantially modified. To copy a VS word processing file to diskette, it is no longer necessary to use COPYWP. The function can be performed directly from the Word Processing menu. COPYWP has been enhanced as follows:

- . It is now possible to delete, rename, and reorganize documents and libraries.
- . The Copy function has been extended to apply to complete libraries, rather than just single documents.
- . A user may now specify the "next" document within a library, rather than having to provide the specific document number.
- . Glossary verification information is preserved whenever a document is copied, renamed, or reorganized.
- . Prototype documents can now be copied.

- . Documents that are password-protected are inaccessible to unauthorized COPYWP users. COPYWP prompts the user for the password.
- . Document and workstation library information and document volume information is automatically used by COPYWP if VS Word Processing software is installed.
- . The document archiving function is now available through the Word Processing menu. It is no longer included as a COPYWP option.
- . Several enhancements have been added to make the utility easier to use. For example, it is now possible to return to the COPYWP main menu from any COPYWP screen by simply pressing PF1.

The functions provided by this release of the utility include the abilities to:

- . Copy documents or libraries
- . Delete documents or libraries
- . Rename documents or libraries
- . Reorganize documents or libraries
- . Convert data processing files to word processing documents, and vice-versa
- . Merge two documents

Since there have been functional changes to this utility, it is necessary for users to change all procedures and programs that used the previous version of the utility. For additional information, refer to the VS Utilities Reference Addendum.

DISKINIT UTILITY (MODIFIED)

All disk volumes that will be used as IPL volumes for Release 5 must be formatted by the new version of DISKINIT. The Relabel Initialize option of DISKINIT properly formats the VTOC for use by IPL. It is strongly recommended that you update all your installation's hard disks by running the Relabel option of the new DISKINIT utility. For further information, refer to the VS Utilities Reference Addendum.

FILE MANAGEMENT UTILITIES (MODIFIED)

Some of the File Management Utilities have been enhanced for Release 5 to support ADMS data bases. In addition, a new File Management utility, EZACCESS, is now available for use with ADMS data bases. These utilities are described below.

- . EZACCESS -- This is a new utility which enables the user to define ADMS data record retrieval sequences for views of ADMS data bases. EZACCESS creates relationships and control files for views. Both of these are required to take advantage of the ADMS functions of the other File Management utilities.
- . CONTROL -- This utility has been enhanced to enable a user to modify the control file of an ADMS view (the control file was created through EZACCESS). The user can rearrange the sequence of the data items for subsequent processing through DATENTRY, create a COBOL record description, or list the contents of the control file.
- . DATENTRY -- This utility has been enhanced to provide support for ADMS data bases. Using a control file and relationship created through the EZACCESS utility, the user can create a data base, modify data in the data base, and add data to or delete data from the data base. DATENTRY is being distributed on a limited basis.
- . REPORT -- This utility has been enhanced to enable a user to define and produce a report of a view of an ADMS data base. Reports are defined using a relationship and control file created through EZACCESS.
- . INQUIRY -- This utility has been enhanced to extend the functionality of the INQUIRY utility to views of ADMS data bases. ADMS processing through this utility requires a relationship and control file created through the EZACCESS utility.

For more information, see the VS Utilities Reference Addendum.

ADMSBACK UTILITY (NEW)

ADMSBACK, an ADMS utility, enables the creation of backup copies of a discrete schema that can be reloaded if there is a hardcrash or system failure. ADMSBACK only backs up ADMS files. The DMS Backup utility (BACKUP) will not back up ADMS files. ADMSBACK provides two options for backing up the data base.

- . A full backup copies all the data base and schema definition files associated with a discrete schema.
- . Archiving the Audit Trail is used for keeping an interim record of the changes that have affected the data base since the last full backup.

ADMSBACK must also be run as the final procedure in the data base loading process. In summary, ADMSBACK is an effective tool for ensuring the consistency of your data base. For more information, see the VS ADMS Utilities Reference.

COMPRESS UTILITY (NEW)

COMPRESS should be used in conjunction with the ADMSBACK utility. Because ADMSBACK, unlike standard DMS BACKUP, does not consolidate free extents on a volume nor does it release unused space when a data base is reloaded, volumes containing ADMS files may become fragmented over time. COMPRESS is provided to reorganize any physical disk volume that contains ADMS files and to consolidate all free extents and release all unused space. For more information, see the VS Utilities Reference Addendum.

DDP UTILITY (NEW)

The Data Definition Processor (DDP) utility is a new system utility which can be used to define an ADMS data base. The user follows a step-by-step process of schema, storage schema, and view definition. In schema definition, the user describes the logical attributes of the records and data items comprising the data base. Once these logical descriptions are completed, the user can proceed to define the storage characteristics of the data base in the storage schema. Finally, the user defines the subsets of the data base to be accessed by application programs through view definition.

Each of the three areas of definition through the DDP provide discrete, familiar functions similar to that of the VS Text Editor. When a schema, storage schema, or view is defined, it must be validated, created/replaced, and activated (made available for system use). The DDP provides comprehensive error detection facilities, enabling the user to easily locate and correct any data base definition errors.

For more information, see the ADMS Utilities Reference.

IBMCOPY UTILITY (NEW)

IBMCOPY allows the user with an archiving workstation (Models 2266C-3, 2266S-2, or 2266S-3) to mount, initialize, retrieve a file from, and create a file on IBM-format diskettes. This utility increases the compatibility and transferability of data between the VS system and other systems supporting the 3740 format. Both single-sided, single-density and double-sided, dual-density diskettes may be used. With this utility, a user can do the following:

- . Read and write to IBM-format diskettes
- . Format any soft-sectored diskette with the IBM format
- . Mount a IBM-formatted diskette
- . Copy/convert VS files or libraries to a IBM-formatted diskette
- . Copy IBM-formatted files on volumes to the VS
- . Initialize a diskette with the IBM control and label information
- . Translate data on the diskette to/from ASCII to/from EBCDIC.

For further information, see the VS Utilities Reference Addendum.

RECOVERY UTILITY (NEW)

RECOVERY, an ADMS utility, is used to restore a data base that has crashed due to a program or system failure. RECOVERY is also employed when moving a data base to a new system (called downloading a data base). RECOVERY is based on a schema-by-schema basis. The RECOVERY utility is utilized in two cases: hardcrash (involving physical damage to a data base), and softcrash (when system operation halts and an IPL is required). Additionally, an automatic recovery procedure is invoked in the case of program abort. The recovery option (full auditing, partial auditing, and no auditing) is chosen as part of the storage schema definition. If you select the full auditing option, ADMS logs both before- and after-images of all records written to the data base in the Audit trail, while if you select the partial auditing option, ADMS logs only the after-images of the data base update. If you select no auditing, no recovery is possible. In summary, RECOVERY is used to restore your data base to a consistent state after a program or system failure. For more information, refer to the VS ADMS Utilities Reference.

VERIFY UTILITY (NEW)

VERIFY can be used to locate indexed file structure problems, such as incorrect data chaining. The utility performs a comprehensive check on the validity of various components of an indexed file. It checks the VTOC entry (FDRI) fields, the validity of the entries in the Alternate Index Description block (AXD), the completeness of the alternate index structure, and, optionally, the consistency of the primary and secondary index structure. Permanent I/O errors are detected. VERIFY continues processing even if structural file errors are found, so that as much information as possible is reported about the file. Input options for verification include file, library, and volume. For more information, see the VS Utilities Reference Addendum.

EDITOR UTILITY (MODIFIED)

The EDITOR included in Release 5 contains FORTRAN support and has been fully developed so that it alone can provide the necessary integrated environment without the EZ language programs. The EZ language utilities (EZASM, EZBASIC, EZCOBOL, and EZRPGII) are no longer needed and thus, will not be supported. The features of the new EDITOR include the following:

- . A new SET command enables a user to fully define the programming environment. This command is especially useful during compile time because it eliminates many repetitive screen transactions.
- . Any program or procedure can be run without leaving the EDITOR environment.
- . Compiler/Linker options transactions are standardized.
- . CREATE screen range parameters allow for file subsetting.

For additional information, refer to the VS Program Development Tools manual.

LINKER UTILITY (MODIFIED)

The Release 5 LINKER includes FORTRAN support. As a result, two static section types have been added: the labeled common and blank common sections. To prevent the accidental linking of static sections having the same name, it is important that static section naming conventions and rules of replaceability are understood. The printer output contains a new message giving the extent of segment memory occupied by the linked program. For additional information, refer to the VS Program Development Tools manual.

SYMBOLIC DEBUGGER (MODIFIED)

The Release 5 Debugger includes FORTRAN support. As a result, certain requirements must be met before symbolic debug processing for FORTRAN can be initiated:

- . SYMB = YES must be specified in the Options List at compile time
- . The FORTRAN source program must be available

For more information, see the VS Program Development Tools manual.

TELECOMMUNICATIONS INFORMATION

BATCH TCCOPY/VSCOPY LIMITATIONS

TCCOPY Release 4.3.0

The number of files within a send library can not exceed 225 files.

3780 does not deblock transparent punch blocks that are greater than 80 bytes. However, this may be accomplished with an external user's procedure.

To transmit a word processed document to a WPS or OIS from a VS, first use COPYWP Version 1.5.3 or greater to convert the word processed document into a data processing file. Then use TCCOPY to send the file. Received word processed documents must be converted from data processing files to word processed documents.

VSCOPY Release 4.1.0

The number of files within a send library cannot exceed 255 files.

If you are receiving a data file with ALTERNATE INDEXED KEYS, the keys will be stripped away. You may run CREATE or a locally developed program on that file to put them back (CREATE is a user aid not a system utility).

To transmit a word processed document to another VS system, first use COPYWP Version 1.5.3 or greater to convert the word processed document into a data processing file. Then use VSCOPY to send the file. Received word processed documents must be converted from data processing files to word processed documents.

INCOMPATIBILITIES USING OLD TCCOPY PROCEDURES

If a user is currently running TCCOPY from a procedure written prior to TCCOPY Release 4.3.0, it will be necessary to make a few changes for the GETPARM fields that have been modified as follows.

- . DIALOUT = ___ YES / NO on the STREAM (GETPARM) has been changed to
LINE = ___ LINE OPTIONS
 0 = AUTODIAL 1 = DIAL-UP
 2 = MULTI PT SLAVE 3 = LEASED
- . TIMEOUT = 00, has been added to the FUNCTION (GETPARM).
- . When selecting a FUNCTION (GETPARM) option, you must now include the TIMEOUT option as well:

ENTER FUNCTION # , TIMEOUT = ##
- . If a bid failure occurs when TIMER = YES, the FUNCTION prname will be replaced with the prname BIDFAIL. The Bidfail screen offers the same PF key and TIMEOUT options as the Function screen. However, if PF16 is pressed from the Bidfail screen, TCCOPY will cancel with a return code of 50.
- . If a bid failure occurs when TIMER = NO, a BIDFAILED message is displayed on the menu screen. Also, a return code of 50 is returned.
- . On the RCVWAIT GETPARM, an option has been added to allow the receive station to go to timeout if a Null message is received.
- . The following changes have been made to the INPUT screen. The user may no longer select OPTION 1 = YES (translation) along with OPTION 2 = YES (transparency). Also, OPTION 2 = YES (transparency) and OPTION 3 = PRINT are no longer compatible. READER is no longer a choice of OPTION 3; the default is now PRINT.

Anyone who is running TCCOPY from a procedure should check that procedure against the current TCCOPY screens, and make any necessary changes to ensure compatibility.

REMOTE WORKSTATIONS

The new Release 3.0.0 Remote Workstation and Host DLP microcode consists of the following subsystems and needs the environment detailed below:

- . The VS/Operating System must be Release 4.2.0 or later
- . The Workstation and Printer microcode in @MC2246R must be Release 3.0.1
- . The Remote DLP PROMs must be Revision 5 (set of 7 PROMs)

- . The Host DLP microcode in @MCREMWS must be Release 3.0.0
- . The Remote Workstation Monitor program RWSMONTR Release 1.0.0
- . The Bus Processor must be Release 4.2.1 (this means that ECN number 14158 must have been applied)

3270 EMULATION

Release 2.7.0 of 3270 Emulation has had several modifications, resulting in the following changes:

- . Two-board workstation lock-up has been corrected
- . MCP fatal task error number 12 corrected
- . Disappearing cursor corrected
- . Incorrect row 24 display corrected
- . Incorrect error message from COBINT corrected
- . Ability to detach user from MCP
- . Timer parameter for COBINT read to prevent unnecessary system overhead

3270 Emulation Version 3.0.0 supported by VS Operating System Release 5.0.0 has a change in the SYSPARMS GETPARM. The 3-character DEVICE keyword has been replaced by the 4-character DLPNAME keyword. Briefly, DLPNAME is in the form nnnx, where nnn is a 3-digit numeric indicating the IOP and x is a letter indicating which DLP on the IOP is being addressed. For example, 064A for the first port on IOP 064, and 064C for the third port on that IOP. For details, refer to the VS 3270 Emulator User's Guide Addendum.

NEW DEVICES

2270V PRINTER

For Release 5 of the VS Operating System, the model number of the 2270V diskette drive is changed to 2270V-0. Use 2270V-0 at all times when referring to this drive, except during GENEDIT; GENEDIT still uses 2270V.

WORKSTATIONS

Release 5 of the VS Operating System supports several new models of workstations. Two models of Archiving Workstations are available: 2266S and 2266C. These workstations come with a separate diskette drive which can be used for data processing, file copying and retrieving, and for word processing document archiving and retrieving. Three diskette options are offered with the 2266S and two are offered with the 2266C; Table 3 lists these combinations.

Table 3. Archiving Workstation and Diskette Combinations

Model	Description
2266S-1	308-Kilobyte Serial Archiving Workstation (AWS) for hard-sectored diskettes
2266S-2	616-Kilobyte Serial AWS for soft-sectored diskettes
2266S-3	1.23-Megabyte Serial AWS for hard- and soft-sectored diskettes
2266C-1	308-Kilobyte Serial AWS with word processing capability, for hard-sectored diskettes
2266C-3	1.23-Megabyte Serial AWS with word processing capability, for hard- and soft-sectored diskettes

When used with the new IBMCOPY utility, the drive can be used to read and write IBM-formatted diskettes. 3740-type diskettes can be used on this drive. IBM BASIC or type H data exchange formats are supported. The different models of the drive support hard- and/or soft-sectored diskettes, single- or double-sided with single- or dual-density. The workstation models available as archiving workstations are like the 2246 serial or 2246C combined workstations.

MODEL 5548z TYPESETTER

The 5548z typesetter is supported for word processing by Release 5 of the VS Operating System. For the necessary start-up information, consult the VS/IIS 5548z Typesetter Operating Instructions manual (800-1501T0-01). This VS manual must be used in conjunction with the following manuals:

5548z Typesetter Reference Manual (contains command structures)

Typesetter 5548z 8-level Character Set Manual

Typesetter 5548z Command Structures and Error Messages Summary Card

ADMS RELEASE INFORMATION

PURPOSE

Through the process of development and testing of ADMS, some limitations and problems have been uncovered. Software Development is aware of these and is working to resolve them as soon as possible. However, in this release of ADMS, a number of problems remain. They are described in this section.

Before using ADMS, it is strongly recommended that you read and become familiar with the information described in this section. If you encounter what appears to be an ADMS problem, read this section first to determine if it is known. If it is not listed, fill out a VS Problem Report and send it, with all accompanying supporting materials, to

Software Support Center
Wang Laboratories, Inc.
1 Industrial Avenue
Lowell, Massachusetts 01851

The Software Support staff will reproduce the problem and enter it in the Problem Reporting System so that Software Development can correct it.

DATA DEFINITION PROCESSOR (DDP)

Some problems have been discovered in the process of implementation, testing, and use of the DDP. The problems are described in the sections below, along with a suggested circumvention. The categories of DDP problems are: General, The Schema Editor, The Storage Schema Editor, and The View Editor. Problems that may occur in more than one editor are included in General; all other problems refer only to the editor in the Section title.

General

Problem - The volumes containing the ADMS dictionary files and/or data files must not be renamed. If these files are renamed (for example, through the RENAME function of the Command Processor), the new names are not recorded in the ADMS data dictionary; therefore, they are effectively out of ADMS control. Changes in file placement should be performed through the Storage Schema Editor of the DDP.

ADMS requires that the root data dictionary files (such as the Schema Directory) be on the system volume and that pointer fields in the data dictionary files point to the actual files. ADMS performs no internal consistency checking of file or volume names.

Circumvention - Make all changes in file placement and naming through the Storage Schema Editor of the DDP, rather than through renaming or scratching files in the Command Processor. Do not move the root data dictionary files from the system volume; if you do this, ADMS will not be aware of the move.

Problem - If a file cannot be opened during schema or storage schema activation, the following points should be kept in mind:

- . The problem cannot be resolved at that workstation because the HELP key is disabled.
- . At another workstation, the file cannot be renamed, because the new file name is not stored in the storage schema.
- . If the OPEN-time problem can be resolved from another workstation (for example, if there was insufficient space for the file on the volume, you can make space available for the file by scratching other files), processing can continue.
- . If the OPEN-time problem cannot be resolved from another workstation (for example, if the file must be renamed), the workstation on which activation is being performed is unavailable for further processing. Only an IPL can re-enable the workstation for processing.

Circumvention - If the OPEN-time problem can be resolved from the second workstation, continue with reorganization; otherwise, IPL the system.

Problem - The DDP requires that the user continue running the DDP until all DDL listings have been printed, thus dedicating a workstation to the printer for the duration of the listing process. DDL listings are removed from the print queue (without printing) if the user exits DDP edit mode.

Circumvention - Be sure that all DDL listings have been printed before exiting DDP edit mode.

Problem - Validation terminates abnormally if listings from previously spooled validations are queued on the printer queue.

Circumvention - Be sure that listings from a validation have been printed before initiating another validation.

Problem - After an APPEND is executed, the DDP only displays current and subsequent items. The appended item is not displayed.

Circumvention - To display a complete list, select the FIRST (PF2) option.

Problem - If there are 8 or less items to list on a DDP screen and NEXT (PF5) is selected, the last item appears to be duplicated.

Circumvention - Although the item is displayed twice, it is not stored twice. Therefore, there is no error in your files.

Problem - Activation of a schema or a view fails with the message FAIL TO ACCESS DD/D if a work volume is not mounted.

Circumvention - The WORKVOL option of SET USAGE CONSTANTS (PF2 of the Command Processor) should be set to a mounted disk volume.

Problem - If reorganization is cancelled, either by the system or the user, the work files are not scratched. These files still exist for the next invocation of reorganization.

Circumvention - When rerunning reorganization after it has been cancelled, press PF3 to scratch the work files when prompted. Then, reorganization can proceed.

Schema Editor

Problem - If a work file cannot be allocated because there is not enough space on the volume, the DDP program checks.

Circumvention - By scratching files on the volume or moving files to another volume, make enough space for the work file available. Then, rerun the schema editor of the DDP.

Problem - If a value constraint on character data items is defined as both "blanks allowed" and a range not allowed, the schema will not be validated successfully.

Circumvention - Be aware of the limitation on defining a data item with value constraints of "blanks allowed" and a range (such as A through Z) not allowed.

Problem - The DDP displays an error message in cases where insignificant leading and trailing zeroes appear. Default values are padded with zeroes to match the scaling (for example, if SCALE=2, 0 displays as .00). If the scale is changed to 1, an error message will be displayed because of the displayed default value of .00.

Circumvention - In the example above, change the default value to .0 and press ENTER. Be sure that the default value conforms to the scale.

Problem - The DDP does not detect decimal points in the LEVEL, SIZE, and OCCURS parameters. For example, if you enter SIZE=2.4, the DDP interprets the size as 24. The DDP should produce an error message at that point, since a size of 2.4 is not allowed.

Circumvention - Be sure to enter whole numbers in the data item screen where they are required.

Problem - When an elementary item is entered with a level number different from other data items, the error message produced is INVALID LEVEL NUMBER WITHIN GROUP SPECIFICATION, even if no group has been specified.

Circumvention - Ignore this misleading error message.

Problem - For a character data item with a length greater than 16, after a schema has been validated with a value constraint of "blanks not allowed", the DDL listing produced by the validation processor indicates "blanks allowed". The message should be "blanks not allowed".

Circumvention - Be aware that the value constraints "blanks allowed" on a DDL listing will be produced for a character data item of a length greater than 16 for which blanks are not allowed.

Problem - If a character data item of size greater than 16 is given an integrity check of "blanks not allowed", subsequent attempts to modify the integrity check to "blanks allowed" will fail. The screen will change, but the change will not be reflected in the data dictionary.

Circumvention - Be aware that a character data item of size greater than 16, originally defined with an integrity check of "blanks not allowed", cannot be changed to "blanks allowed".

Problem - When all value constraints are deleted for a schema data item, if the constraint "blanks allowed" existed, it is not deleted.

Circumvention - Ignore the DDP constraint count message and specify the desired condition for blanks.

Problem - After appending value constraints to the last item on a record and pressing ENTER, the record processing screen will appear in display mode, but the comments may be modifiable.

Circumvention - Ignore the highlighted field and press MODIFY before entering comments.

Problem - If you cancel the DDP while a schema is being created by the CREATE function and if the volume is not mounted, the DDP will program check.

Circumvention - Mount the volume or respecify another volume.

Problem - If value constraints are deleted, the DDP does not reset the internal value constraint count. Therefore, even though the value constraints are deleted, the deleted count is subtracted from the allowed number of value of value constraints. (See the ADMS Utilities Reference for a description of the value constraint count calculation.).

Circumvention - If your application requires frequent additions and deletions of value constraints, keep track of the number of value constraints defined and deleted. Remember that every time you delete a value constraint, you have one less constraint that can be defined.

Problem - If no prior data items exist, an attempt to DISPLAY PRIOR (PF4) produces a program check in the Schema Editor display.

Circumvention - Before displaying prior items, make sure a prior group exists.

Problem - The message issued when a FIND fails is misleading. The search is made at the current level and/or current record, yet the message states NAME ENTERED NOT FOUND IN THIS SCHEMA.

Circumvention - Be aware that the message means that the name was not found at the current level and/or current record.

Problem - When the schema data item type is changed from U (unsigned integer) to C (character) and if the default had been 0, it now becomes one byte containing the ASCII character 0, followed by trailing blanks.

Circumvention - If zeroes are still desired as the default, specify 0 for all positions of the data item.

Problem - In the Display Data Items function, PRIOR displays the first screen of items instead of the prior screen.

Circumvention - Do not use PRIOR in the Display Data Items screen.

Problem - When the size of a character item is changed and the value constraints exist for the item, the scale field blinks when the truncation message is issued.

Circumvention - Ignore the blinking scale field.

Storage Schema Editor

Problem - If the recovery option in the DDP is changed from Full or Partial to None, the audit trail and restart file are scratched but the user is not notified of this.

Circumvention - Be aware of this action by the DDP.

View Editor

Problem - The DDP will allow storage type to be changed to binary for items with default values outside the half-word binary range of +32767 to -32767. The runtime system will not detect the inconsistency between a default value greater than 32767 (or less than -32767) and a storage type of binary. Therefore, in such a situation, a possibility exists of writing data inconsistent with the definition to the file.

Circumvention - Be aware that ADMS does not check that a default value for binary items can exist beyond the range of +32767 to -32767 if the item was changed from another storage type.

Problem - The message UNABLE TO OPEN DDL FILE, which occurs during view validation when there is insufficient space to create a DDL file, is misleading.

Circumvention - Be aware that the message UNABLE TO OPEN DDL FILE during view validation means that there is insufficient space to create a DDL file.

Problem - Assume that an alternate key is an elementary item which is part of a group item. Adding the group item to the view adds all the elementary items in it, so the elementary item above is included. However, it is not marked as an alternate key. For example:

```
01 SCHEMA-RECORD.  
03 GROUP-ITEM.  
05 ALTERNATE-KEY    PICTURE IS X(10).
```

Adding GROUP-ITEM also adds ALTERNATE-KEY to the view, but does not flag ALTERNATE-KEY as being an alternate key item.

Circumvention - Remap the entire record, and delete undesired items in KEY PROCESSING.

Problem - Views are not invalidated when an alternate key is added or switched to an item that exists in the view or when a new data item is added to the group. The records written using that view will not be written along the new alternate path(s).

Circumvention - Add the complete set of alternate paths to the view, validate the view, and activate the view. Then, recompile each program referencing that view.

Problem - If an alternate key, embedded within a group, is added to a view, the DDP view editor includes the data item and all its subordinate items in the view, but not its parent. For example:

```
01 SCHEMA-RECORD.  
03 GROUP-ITEM.  
05 ALTERNATE-KEY-1.  
07 CHILD-OF-ALTERNATE-KEY-1 PICTURE IS X(10).
```

If you include ALTERNATE-KEY-1 (an alternate key) in the view, CHILD-OF-ALTERNATE-KEY-1 is also included, but GROUP-ITEM is not.

Circumvention - Remap the entire record, including the desired items.

Problem - Duplicate data names are only flagged as an error condition if COBOL is defined as an application in the view. The DATENTRY, REPORT, and INQUIRY utilities do not allow duplicate data names; however, the validation processor does not detect duplicate data names where DATENTRY, REPORT, and/or INQUIRY are defined applications.

Circumvention - Define COBOL as an application for a view even if it is to be used for DATENTRY, REPORT, and/or INQUIRY purposes.

Problem - The message at the completion of view validation does not indicate whether the DDL has warning messages.

Circumvention - To ensure that you see warning messages, always display the DDL even if the validation indicates that no errors occurred.

Problem - When you return to view file mapping display from the record mapping display, only the last schema file is displayed.

Circumvention - Select FIRST (PF2) to display a complete list.

Problem - The view editor does not allow specification of a numeric item whose size is equal to the scale.

Circumvention - Allow one digit for the decimal point. For example, to define a scaled numeric item of three digits to the right of the decimal point, specify the size as four.

Problem - The change log work file (WXRWKuserid in WXRGuserid on system volume) is not being scratched following activation or reorganization.

Circumvention - Scratch the file after activation has completed.

Problem - Schema comments are not displayed during view processing.

Circumvention - Reenter record comments.

THE ADMS RUNTIME SYSTEM

The following problems concerning the ADMS runtime system (problems encountered when actually running ADMS programs) have been reported and are under investigation.

Problem - The SYSGEN option of fixing the sharer buffers does not always take effect.

Circumvention - Be aware that the sharer buffers may not always be fixed by the SYSGEN option.

Problem - If a COBOL program issues a STOP RUN while in transaction state (an INITIATE TRANSACTION has been issued without a TERMINATE TRANSACTION) and if files are opened SHARED, the VS Operating System reports ERROR 15#1: ERROR CLOSING SHARED FILE and the user must cancel. Processing can proceed normally from that point.

Circumvention - Before issuing a STOP RUN, be sure that no INITIATE TRANSACTION is active (i.e., that the program is not in transaction state). An INITIATE TRANSACTION statement should be paired with a TERMINATE TRANSACTION statement.

POSSIBLE PROBLEMS IF A CRASH OR IPL OCCURS DURING SCHEMA ACTIVATION

If a crash or IPL occurs during schema activation, certain switches may not yet have been set in the data dictionary, so that initial loading of files may not be allowed. If this occurs, follow the procedure below:

1. Use the DDP to edit the storage schema, setting the recovery option to NONE.
2. Activate the schema.
3. Re-edit the storage schema, setting the recovery option to its previous state (Full or Partial).
4. Reactivate the schema.

If this procedure does not work, it will be necessary to use the DDP to delete the schema and redefine it. You can eliminate some work by saving the schema definition into another schema name before you delete the schema. Then you can edit the saved schema definition and write it to the desired schema name. All views must also be redefined.

THE ADMS BACKUP (ADMSBACK) AND RECOVERY UTILITIES

Problem - If at least three volumes are used to backup a schema using ADMSBACK and the last volume does not have enough room on it to complete the backup, it is possible for the user to specify a volume which has already been used for the schema backup. If this is done, part of the backup will be scratched, and the schema is not recoverable.

Circumvention - Be sure to avoid reusing volumes containing portions of the backed up schema as part of the same backup.

Problem - When downloading a schema, the internal schema-ID for the schema being downloaded may conflict with an existing schema on the receiving system. The two schemas may have identical names but different schema-IDs, or they may have different names but identical schema-IDs. In either case, the downloading process fails with a message indicating which condition has occurred and giving the name of the conflicting schema.

Circumvention - For systems where downloading is likely to be a major factor, the user must ensure that each schema is given a unique name. All efforts should be taken to download the shared schemas before any locally defined schemas are created. In the event of a conflict, the conflicting local schema must be scratched before the downloaded schema may be loaded.

Problem - If a user creates a schema, backs it up, and scratches it and if a second user creates a schema with the identical name, then backs it up to the same backup volume, the first schema's backup copy is scratched without giving any warning to the user.

Circumvention - Be sure that each user who creates a schema is assigned a unique name for the schema.

EZACCESS AND THE FILE MANAGEMENT UTILITIES

No known problems exist in EZACCESS or the File Management utilities.

CORRECTED SOFTWARE PROBLEMS

OPERATING SYSTEM CORRECTIONS

The following lists contain some of the Operating System software errors that have been corrected.

PRITTSK

The forced page ejection that occurs when the system enters Word Processing mode can destroy top-of-form alignment.

OPERATOR

PAUSE can fail if a background job is submitted, paused, then continued before it starts executing.

DMS

1. Switching off the workstation does not reset workstation tabs.
2. DMS does not handle the buffer correctly when it is deleting a record that requires an update to all levels of the primary index tree.
3. When writing to tape with RAM access, the last record written to the first tape is also the first record written to the second tape.
4. DMS does not mark @MC2780@ or @MC3780@ as nonrefreshable microcode.

UTILITY CORRECTIONS

The following lists contain errors in the utilities that are now corrected.

BACKUP Version 3.14.00

1. The library @SYSWORK is not backed up to tape.
2. RESTORE LIBRARY or VOLUME from a backup tape with the Noclear option does not work if the disk or tape contains a large file.
3. If the user reruns BACKUP after restoring a file from tape to disk and if the user specifies a temporary file as the output file, the system displays an error message about the workfile.
4. If the user changes the work volume specification while executing a RESTORE from tape, the system requests the number of records in the file.
5. The listing produced during a RESTORE from a tape that contains only one file indicates that no files are copied; actually, one file is copied.
6. When performing a RESTORE LIBRARY with ERRDISP=YES and DUPFILES=SCRATCH, BACKUP does not issue an error message if it cannot scratch an output file.
7. If BACKUP puts a file on 2 volumes, the log shows an incorrect number of records.
8. When performing a RESTORE LIBRARY with ERRDISP=YES and DUPFILES=SCRATCH, if no log file is created and some output files cannot be scratched, BACKUP displays a message indicating that no errors were encountered.
9. The user backed up a 75 Mb disk to tape, performed IPL from another drive and restored over the original disk. Although BACKUP reported no errors and the error log was clear after the original BACKUP, the RESTORE failed with a fatal I/O error that caused the loss of an entire file.

COPYWP Version 2.00.00

1. Prior versions of COPYWP could not process certain documents that went through Document Recovery.

2. COPYWP TC format files produced by version 1.05.04 are compatible with TCCOPY TC format files produced by version 4.3. TC format files produced by prior versions of either utility are not compatible with the current version of COPYWP.
3. COPYWP now correctly copies a 2-record VS document to or from a VS document.

DEBUG

1. INSPECTing a COBOL data name of the type PIC S9P(17) SIGN LEADING SEPARATE hangs the workstation.
2. If the size of the table is greater than 255 bytes, the COBOL 2307 compiler generates bad code for the SET UP BY command.
3. A number specified PIC S9V(14) displays incorrectly; two digits appear to the left of the decimal point.
4. Attempting to modify an index data item causes a program check.
5. For an RPGII program, if LIST=NO and the user attempts to enter DEBUG, the workstation hangs.
6. When attempting to inspect a PIC S(15)PPP data item, DEBUG enters a loop.
7. When a background job terminates due to a CPU time limit, the message "HELP processor entered by user request" appears.

EDITOR Version 5.07.02

1. After a BASIC program is renumbered, replaced, and compiled, the stack contains no space to renumber.
2. The EDITOR will not XCOPY (Supercopy) to the end of a BASIC file.
3. The EDITOR fails to renumber lines when the comment delimiter is in column 72.
4. For Assembler files, the Restart option causes invalid macro library options.
5. The EDITOR deletes return codes that are larger than four digits.
6. During a REPLACE, when a boundary violation occurs, there is no opportunity to save the file in another location.

7. After a compile, the EDITOR does not return the RPGII form type.
8. The EDITOR does not correctly renumber multiple BASIC statements that appear on one line.
9. The Renumber option inserts the current line number between commas if the statement is syntactically incorrect.
10. When doing an XCOPY (Supercopy), the EDITOR extends the information in columns 73 -- 80 through the rest of the source file if ID field retention is unconditional.
11. When the user attempts to XCOPY a non-BASIC file into a BASIC source program, the EDITOR displays an incorrectly worded error message.
12. The ID keyword on the Create option output screen does not allow embedded blanks.
13. In a BASIC source program, the utility does not number one statement.
14. In BASIC programs containing "ON...GOTO line #" statements that use null line-number positions, RENUMBER correctly alters the line numbers in those statements, but it also inserts numbers in the null locations.

SORT Version 5.03.00

SORT detects an invalid key in a record that is not selected.

TAPECOPY Version 2.04.00

1. TAPECOPY does not change the record size correctly.
2. TAPECOPY translates lowercase to uppercase for ASCII to EBCDIC.

TAPEINIT Version 2.02.00

When initializing a 7-track tape, TAPEINIT writes a block containing nonsense.

VERIFY Version 1.04.00

1. The PR names used for the EOJ option differ depending on the range.
2. Empty files appear on the error report.

3. When the summary report is longer than one page, the volume and library names are not printed on the new page(s).
4. The consistency check for the RANGE parameter makes it difficult to proceduralize.
5. If alternate index keys are inconsistent, the alternate key number is incorrectly recorded in the error report.
6. When a key inconsistency is detected, if the user presses PF 1 for more information, the program enters the Debugger and has to be cancelled.
7. If SPOOLVOL is set to an unmounted volume, no summary or error report is generated.
8. If no files are verified, the report heading is missing from the summary report.
9. VERIFY performs a program check if an error occurs in the unused blocks chain.

LANGUAGE CORRECTIONS

BASIC Compiler

The following list contains problems and design change requests from previous releases of the BASIC compiler (Version 3.03.01); all are fixed in the version of the compiler included with VS Operating System Release 5.

1. When a variable is declared as COM but is not used in a particular module, the compiler complains that it is referenced only once in the program.
2. When a program has PRINT AT(2,A), input A does not work if A is greater than 57; it prints the ? on the next line.
3. No syntax error message (or warning) appears when an STR expression is incorrectly formatted.
4. SELECT PRINTER does not work correctly.
5. If a SELECT statement specifies a subset of the existing alternate key structure for the alternate key list, the program fails and CLOSE reports error E005.
6. If an invalid numeric alpha string is input to a BASIC CONVERT statement that contains a DATA error exit, the error exit is not taken.

7. READ, WRITE, and REWRITE statements using a format containing numeric or alpha array designators fail with a data conversion error.
8. Syntax checking rejects legal numeric expressions in the CALL argument list.
9. The comparison of a rounded variable to a numeric literal works only when the second operand is 3 or 6.
10. If an alternate indexed file is opened, shared, then closed, scratched, and reopened for OUTPUT (to reallocate the file), all within the same program, that file's UFB will not allow alternate key paths.

COBOL Compiler

The following list contains problems and design change requests from previous releases of the COBOL compiler; all are fixed in the version of the compiler included with VS Operating System Release 5.

1. When attempting to DISPLAY AND READ, the program fails with an addressing exception.
2. In DISPLAY AND READ, the DISPLAY format name (USAGE IS DISPLAY-WS) and items subordinate to it are permitted as data names in the SOURCE and OBJECT clauses; the code generated is invalid.
3. An error 263 textual message that referred to level 55 items is revised to refer to DISPLAY-WS records instead.
4. The length of the error message text line in the listing has been shortened to 80 bytes to avoid truncation when the EDITOR displays the message.

The following list contains changes made in the COBOL compiler that may affect existing programs.

1. The user must specify DISPLAY AND READ ALTERED to use NO-MOD. If NO-MOD is specified without ALTERED, the compiler issues a level 8 error message.
2. MOVE figurative constant TO FAC OF ws-item now requires explicit FAC OF. The user must explicitly say MOVE a TO FAC OF b if b has USAGE DISPLAY-WS. MOVE a TO b is an error.

3. The compiler diagnoses record lengths which exceed operating system maximums. The following maximum record lengths are now enforced:

<u>Device</u>	<u>Maximum Length</u>
DISPLAY	1924
PRINTER	240
TAPE	32767
DISK, fixed SEQUENTIAL	2048
DISK, fixed INDEXED	2040
DISK, variable or compressed	2024
ADMS restart file	1986

4. The compiler detects the illegal use of zero in the BLOCK CONTAINS, RECORD CONTAINS, BUFFER CONTAINS, or ALTERNATE RECORD KEY clauses.
5. Symbolic debug displays the first 65535 characters of an identifier.
6. Two USAGE clauses in one data description entry will cause a level 8 error.
7. The user must correctly follow the syntax of the SPECIAL-NAMES paragraph; otherwise, a level 8 error results.
8. The rules documented in the VS COBOL Reference for VALUE OF operands are now enforced.
9. An OCCURS clause specifying 0 TIMES results in a level 8 error.
10. INSPECT level 2 is now supported.
11. If the data name specified in the SOURCE or OBJECT clause of a DISPLAY-WS item's data description entry has usage DISPLAY-WS, a level 4 error results.
12. If the data description entry of a DISPLAY-WS item specifies RANGE FROM a TO b where a is greater than b, a level 6 error results.
13. The VALUE clause specified in the data description entry of a DISPLAY-WS item must be consistent with that item's PICTURE; otherwise, a level 4 error results.
14. If the placement of fields on a screen defined by a DISPLAY-WS record causes fields to overlap, a level 4 error results.
15. Data transfer from screen to object field is as follows:
 - a. Implied decimal points and scaling (PICTURE characters V and P) are ignored in DISPLAY-WS item movement from screen to object field.

- b. Invalid data detected when moving to a numeric object results in the redisplay of the incorrect screen with the field blinking.
 - c. Moves from numeric-edited screen fields to numeric object fields include removal of currency sign, CR, DB, commas (and periods if DECIMAL POINT IS COMMA), and asterisks.
16. Using a file name as the data name in a VALUE OF FILENAME clause results in a level 8 error.
 17. The number of areas specified in the RESERVE clause must be between 3 and 60, inclusive.
 18. For alphanumeric and numeric-edited screen fields with RANGE clauses:
 - a. If the RANGE items are numeric, the screen fields are converted to numeric before comparison.
 - b. If the RANGE items are alphanumeric, an alphanumeric comparison is performed.

RANGE items are properly aligned with their comparands before comparison.

19. If an ON PFKEY clause is executed, blinking FACs are set to high intensity.
20. Invalid operands in the SET statement are diagnosed, and the rules in the VS COBOL manual are now enforced.
21. The data name specified in a RELATIVE KEY clause must be defined; invalid RELATIVE KEY items are flagged.
22. If the computed record size (from O1 items) differs from the record size defined in the RECORD CONTAINS clause, the computer issues a warning message.
23. If multiple O1 items are specified with different lengths, the file is fixed-length, and the largest item exceeds the record size defined in the RECORD CONTAINS clause, the compiler uses the computed length and issues a warning message.
24. REWRITE now works properly with variable-length records.
25. In a picture character string, the compiler now accepts any legal currency symbol that may be specified in the CURRENCY SIGN clause, including the backslash (yen sign).
26. Subscripted identifiers now work in SET statements.

27. A file name (FD NAME) must not appear as an operand in a conditional expression.
28. A DISPLAY-WS item which has an OCCURS clause and ends in column 80 is no longer considered an error.
29. The RELATIVE KEY phrase is meaningless for tape files; its use now results in a level 8 error message.
30. Protected fields are no longer range checked in DISPLAY AND READ. Additionally, the compiler issues a level 4 warning message for items with a RANGE but no OBJECT.
31. Error 710, which warns that a filename cannot be passed as a parameter to a COBOL subroutine, is now a severity 1 message.
32. NEXT SENTENCE used in an IF statement must be followed by either a period or an ELSE clause.
33. The compiler now recognizes the following as reserved words: KEYS, DATA-BASE, FREE, EXTENSION-RIGHTS, HOLDER-ID, DELETION, EXCLUSIVE, LIST, INVOKE, PRIOR, RESTART, RETRIEVAL, TRANSACTION, UPDATE, VIEW, and TIMEOUT.

RPGII Compiler

The following list contains problems and design change requests from previous releases of the RPGII compiler; all are fixed in the version of the compiler (Version 3.03.01) included with VS Operating System Release 5.

1. The problem concerning the representation of a plus sign in an unpacked, numeric field, which is written to a disk file by a WANG RPGII program, has been eliminated.
2. An RPGII user can now specify more than one shared update file in a single RPGII program.
3. A new operation, ALARM, now allows the user to sound the alarm from an RPGII program. ALARM may appear anywhere in a WANG RPGII program where a workstation file is specified.
4. The compiler allows specification of a record length of greater than 2040 for indexed files.
5. Specification of additional I/O areas is ignored.
6. The compiler allows specification of a record length greater than 2024 for a consecutive file with variable length records.
7. The compiler allows specification of a record length greater than 2020 for indexed files with variable length records.

8. The sign reserve on a workstation specification does not reserve an extra space as it should.
9. When an array element within an input record is tested with the field indicators for plus/minus/blank/zero, the program terminates with a data exception.
10. When adding array elements and specifying the half-adjust feature, the program terminates abnormally when the element has an even number of decimal positions.
11. When a resulting indicator is specified on a workstation specification entry that contains a numeric array as the object field, the program terminates abnormally.
12. The compiler allows the specification of a record length of 2048 for a log file.
13. The line counter specification is not working in RPGII; a skip to line one always results in a skip to channel one of the carriage control tape.
14. When elements of arrays with constant indexes are added, the element immediately before the one referenced, is changed.
15. In some instances, the compiler attempts to load a 1-byte variable index value, as a 2-byte value, resulting in a data exception at run-time.
16. Strange printer behavior occurs causing unwanted page slews at the perforation, regardless of the presence or absence of a Line Counter Specification.
17. When an unpacked, numeric, unsigned, input array is output as an entire array on an Output Specification, the elements are given signs in their rightmost byte positions.
18. When "blank after" is specified on an Output Specification for an entire alpha array less than 256 characters long, only the first byte of the array is cleared to blanks.
19. When outputting an entire alpha array greater than 256 characters in length, with "blank after" specified, multiples of 256 are blanked out correctly, but any remaining portion of the array is not cleared to spaces.
20. The printer is single spacing down the page, when it is skipping to a line number less than the current line number.
21. Compiler is looping and, finally, crashes in code section WR1ASGN2. This problem occurs when the maximum number of tables allowed in a single program is exceeded.

22. Occasionally, in very large programs, an addressing exception is taken while testing indicators connected by and/ors.
23. The RPGII line counter was changed to behave as follows: If program contains a Line Counter Specification or if the default page length is overridden at compile time, the compiler assumes that the carriage control tape should be overridden. Therefore, no skips to channel one will be issued, and all spacing and skipping will be done a line at a time to facilitate counting of lines. If the program does not contain a Line Counter Specification and the page length on the options screen is not modified, then the carriage control tape is assumed to reflect the page depth, and channel one will be used in conjunction with single line spacing to skip to lines that are less than the current line number.

CORRECTIONS TO OPTIONAL SYSTEM SOFTWARE

VS/Word Processing Corrections

The following list contains fixes to the VS Word Processing File-handling Subroutines (Version 1.02.01).

1. The document password is now filled with Hex 00s rather than blanks for GETINFO and PUTINFO item number 18. This conforms to the word processing standard of blanks (Hex 20) being illegal within the password's character string.
2. VS Data Management boundary violations no longer cause infinite loops or program checks, but they do produce return code 24.
3. VS Data Management possession conflicts no longer result in GETPARM screens, but they do produce return code 8. Various other GETPARM screens that could be generated during OPEN are suppressed.
4. WPOPEN now produces return code 52 if a document's internal page table and link chain are inconsistent. The user can access the document for INPUT, but some text may not be accessible. The user may recover the document by running Word Processing, creating a new document, and then SUPERCOPYing the damaged document.
5. Problems with WPWRITE and WPREWRIT are fixed.
6. Work times returned by GETINFO are blank filled, not zero filled.
7. The user may now create large documents. The document file's unused space is no longer released during WPOPEN in OUTPUT mode.
8. WPOPEN failures no longer destroy buffers.
9. GETINFO item number 16, Total Lines, is now properly aligned.
10. GETINFO item number 14, Total Pages, is now properly set.
11. PUTINFO item number 14, Total Pages, is no longer supported and results in return code 28. The total page count is updated automatically by the subroutines when the user deletes, replaces, or adds text.

TELECOMMUNICATIONS CORRECTIONS

Remote Workstations

The following changes were made to the remote workstation and Host DLP microcode.

1. After deactivating the remote workstation, the VS now drops DTR.
2. The system no longer hangs when a nonexistent printer is activated and deactivated.

Batch TCCOPY and VSCOPY

These utilities include several new features and functional improvements. The changes that affect both TCCOPY (Version 4.05.00) and VSCOPY (Version 4.03.00) follow.

1. TCCOPY will now make only one attempt to establish a connection. If the user has autodial capabilities, additional connection attempts through the RETRY field of the DIAL screen may be specified.
2. If a bid failure occurs when TIMER=YES, the BIDFAIL prname replaces the FUNCTION prname. The Bidfail screen offers the same PF key and Timeout options as the Function screen. However, if the user presses PF16 from the Bidfail screen, TCCOPY cancels and returns a code of 50.
3. If a bid failure occurs when TIMER=NO, a BIDFAILED message appears on the menu screen, and issues a return code of 50.
4. When TCCOPY or VSCOPY attempt to send a file that is already in use, it returns an error message reflecting that status.
5. After the system sends DLE/EOT, there is a two-second delay before data terminal ready is dropped; if a disconnect occurs, the utility issues a return code of 32.
6. The microcode allows insertion of IUS (Interunit Separaters) when the blocking option is used.
7. The over print problem that has been occurring in 3780 has been corrected.
8. The translation tables were changed to reflect the necessary corrections.

The following changes apply only to TCCOPY.

1. If TCCOPY with OPTION 1=YES (translation) receives the Hex Character 00, it translates that character to a Hex 20 (ASCII space).
2. The RCVWAIT GETPARM now contains an option that allows the receive station to timeout if it receives a null message.
3. The following changes were made to the INPUT screen: The user may no longer select OPTION 1=YES (translation) along with OPTION 2=YES (transparency). OPTION 2=YES (transparency) and OPTION 3=PRINT are no longer compatible. OPTION 3 no longer has READER as a choice; the default is now PRINT.

4. The horizontal tab format control is now working properly.
5. The first screen now contains a PF16 escape key.
6. Transparent data directed to the printer is now placed in the print library.
7. An unexpected DLE/EOT is now handled properly.
8. TCCOPY's PRNMODE, PRTCLASS, FORM #, and spooled VOLUME now default to the USER CONSTANTS.
9. The error that occurs when TCCOPY is handling exactly 63 spaces using 3780 space compression has been corrected.
10. The RV1 is now handled properly.
11. In the summary information, the totals for NUMBER OF RECORDS RECEIVED during a TC/session now handle multifile sessions.

The following changes apply only to VSCOPY.

1. VSCOPY now includes TIMER=YES. This allows the user to proceduralize VSCOPY and to run it from the background.
2. It is now possible to transmit variable-length files that contain large records without receiving a file status of 97.
3. A program check does not occur when transmitting a print file from one VS to another.
4. A user with limited access rights is now informed of that fact.

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