303-273-2005 Bill Bled
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Howard Bledsoe

HOW TO OPERATE...

Comm-Stor* II

Communications Storage Unit

* Comm-Stor is a registered trademark of SYKES DATATRONICS, INC.

PREFACE

This Operator Guide has been primarily prepared for the ***first-time user*** of a Comm-Stor II Communications Storage Unit and therefore, focuses on the most frequently used features and commands. The instructions described in this Guide, however, are intended to provide the basis upon which more advanced operating skills and techniques can be developed. And, although the use of technical terms is minimal, the new operator should have ***prior experience with a data communications terminal and be familiar with basic keyboard use.***

A complete description of Comm-Stor Communications Storage Unit commands, features and instructions for reconfiguring the Unit to particular data system requirements and building Refresh or User diskettes are contained in the manual "How to Configure... Comm-Stor II" (Bell System No. 999-302-150).

The Appendix contains Practice Exercises to assist the new operator in becoming familiar with the Comm-Stor commands and operations. These exercises should not be attempted, however, until after reading the complete Operator Guide.

Additionally, messages that are maintained on diskette for later transmission will be referred to as files. Finally, for the reader's convenience, the Comm-Stor II Communications Storage Unit will be referred to as the Comm-Stor Unit or simply Comm-Stor throughout this manual.

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CHAPTER 1

INTRODUCTION

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1. GENERAL

Comm-Stor is a Communications Storage Unit that is capable of storing and retrieving information upon operator request through commands entered at a terminal or received from a remote location.

The operator's terminal is an important link to stored information, and the Comm-Stor Unit may be used with many types of keyboard and display units.

Information is stored in the form of "files" on a magnetic disk, called a diskette. Depending upon the application, an operator may refer to this information as messages, files, records, or pages. When files are created, they are assigned a file name by the operator. These names are automatically stored on the diskette. Because the Comm-Stor Unit maintains a Directory of all file names, any file may be retrieved simply by requesting it by name.

2. Comm-Stor FUNCTIONS

The Comm-Stor Unit is a communications storage system which is capable of performing other important functions. These functions, controlled by special commands, allow the operator to:

1.) *ENTER* new file data or compose a file,

2.) *DISPLAY* files maintained on the diskette,

3.) *EDIT* or revise a file that has been previously stored in the Directory.

Another important function of the Comm-Stor Unit is the FORMS operation (optional) which allows the operator to create and store special forms, and to use the data storage capability to improve handling forms data prior to transmission. This feature is discussed, in detail, in Chapter 5.

3. ON-LINE-OFF-LINE MODES

The Comm-Stor Unit may be operated in either the ON-LINE or OFF-LINE mode. When used in the OFF-LINE mode prior to transmission, the exchange of commands and information takes place only between the Comm-Stor Unit and the operator's terminal. When used in ON-LINE operation, the Comm-Stor Unit is connected to a telephone line allowing commands and information to be exchanged not only with the operator, but also with a remote location. These operations are described in Chapter 6.

4. COMMAND AND INFORMATION FLOW

The figure on the following page shows a simplified block diagram of a typical Comm-Stor system. It illustrates the OFF-LINE and ON-LINE modes by showing how the Comm-Stor Unit can be connected to and controlled from either the operator terminal or remote location. The black arrows represent the ON-LINE mode in which all commands and information flow take place between the Comm-Stor Unit and the operator's terminal.

All data or information falls into one of three categories:

1.) CONVERSATION—

between the operator's terminal and the remote location.

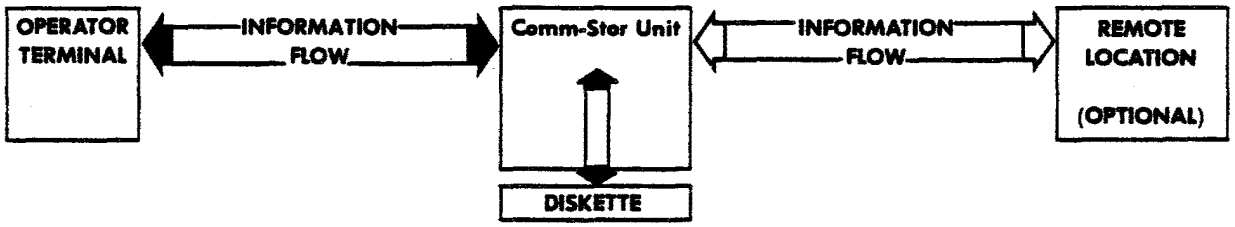
2.) COMMANDS—

initiated from the operator's terminal.

3.) DISKETTE DATA—

the flow of information to or from the diskette.

Remember, when operating in the OFF-LINE mode, all information flow will be limited to commands entered at the operator's terminal and the flow of diskette data between the Comm-Stor Unit and the terminal display.



Off-Line

On-Line

CHAPTER 2

OPERATING PROCEDURES

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1. GENERAL

This Chapter describes general operating procedures covering:

1.) Start-up Sequence
2.) Insertion of Diskettes
3.) Resolving Error Messages

The instructions assume that the system is complete including Comm-Stor and a terminal and that a valid User Diskette is available.

2. START-UP

Comm-Stor is turned on and off by pushing the power switch/circuit breaker button on the rear of the unit (see Figure #2-2). Comm-Stor should be powered on when the operator is ready to enter data. With power supplied to the unit, the square white RESTART button on the front panel will remain illuminated, and the four red indicator lights located on the front panel will flash on for about two seconds to permit a visual lamp test (see Figure #2-1).

Use this opportunity to check to see that none of the bulbs are burned out. Any defective bulbs should be reported.

Finally, power to the terminal and any other peripheral devices should be turned on: the sequence in which Comm-Stor and any peripheral devices are turned on is not critical.

NOTE: The BINARY MODE SWITCH on the rear of the unit (see Figure #2-2) should be set to the EXIT position for normal Comm-Stor operations. Additionally, the BAUD SETTING SWITCHES on the rear of the unit (see Figure #2-2) should be set by a supervisor before the operator begins data entry. Neither the Binary Mode switch nor the Baud Setting switches should be moved by the operator unless instructed by a supervisor.

3. CONNECTING PERIPHERAL DEVICES

A terminal, printer and modem may be connected to Comm-Stor via industry standard connectors on the rear of the unit (see Figure #2-2). These connectors, commonly called "ports," conform to the Electronics Industries Association specification RS-232-C. No special wiring of the cables is necessary and all leads should be wired pin-for-pin.

Appendix F contains a table of EIA interface signal connections for the terminal, modem and printer ports.

A. Terminal Port

The cable from the terminal is connected to the port labeled TERM. This cable should have a male plug in accordance with industry standard procedures.

THE USER MUST PLACE THE TERMINAL IN THE FULL DUPLEX MODE FOR ALL OPERATIONS. THE TERMINAL MUST REMAIN IN THIS MODE FOR BOTH FULL AND HALF DUPLEX MODEM CONNECTIONS.

B. Printer Port

If the user has the Printer Port option, the cable from the printer is connected to the port labeled PRINTER. This cable should have a male plug in accordance with industry standard procedures.

If the Printer Port is installed but the user does not wish to use it at this time, the connector may be left unterminated.

C. Modem Port

The cable from the modem is connected to the port labeled MODEM. This cable should have a female plug.

4. USING DISKETTES

A. Comm-Stor Diskettes

The Diskette is an important part of the Comm-Stor memory and storage function. Three types of Diskettes, called CONFIGURATION, REFRESH, and USER are used in the Comm-Stor system. In physical appearance, all three look alike, but each serves a different purpose.

All User Diskettes used with the Comm-Stor Unit must be IBM 3740 compatible media. Each Diskette is composed of 77 tracks, and each track contains 26 sectors. Warranty of the Comm-Stor Unit is contingent upon the use of diskettes supplied by:

Sykes Datatronics, Inc.
375 Orchard Street
Rochester, New York 14606
Attn: Order Department
(716) 458-8000

Specify part number: 1030A0094 (box of 10 diskettes)

Configuration Diskette

The Configuration Diskette is the device which is used to create User and Refresh diskettes, as well as to vary the operations and resources of the Comm-Stor Unit. Use of the Configuration Diskette is covered in publication number 999-302-150 "How to Configure... Comm-Stor II".

Refresh Diskette

Once Comm-Stor is configured, it is possible to store this configuration on a diskette called a Refresh Diskette. After a Refresh Diskette has been created, another Comm-Stor unit can be identically configured by inserting the Refresh Diskette and pressing the RESTART button.

User Diskette

The User Diskette contains a Directory and is used for all normal operations. If not already available, this diskette should be created before proceeding further in this manual.

The User Diskette is created with the Configurator. It is initialized with such parameters as the maximum number of characters in the file name and the maximum file length.

B. Inserting the Diskette

The USER Diskette should be inserted into the Comm-Stor diskette drive ***only*** after the power-up sequence is completed. The door of the drive should be open; if it is not, open the door and remove any diskette that might be already in the machine.

Now, holding the diskette in a horizontal position (label up and toward the operator), slide the diskette all the way into the opening. Then, apply a slight inward pressure and flip the door downward to the closed position.

If this is done properly, the red READY light will be illuminated, indicating that Comm-Stor is ready for use.

DOs and DON'Ts

Here are some important points to remember when inserting a diskette:

—Power to the Comm-Stor unit must be on before diskettes are inserted.

—Diskettes should not be forced into position, as damage will result.

—The Drive unit door is normally open and cannot be closed unless a diskette is properly in place.

—*DO NOT* attempt to open the door of Comm Stor or press the RESTART switch when the BUSY lamp is lit.

—*DO NOT* force the drive door closed; a steady inward pressure is enough to release the locking mechanism.

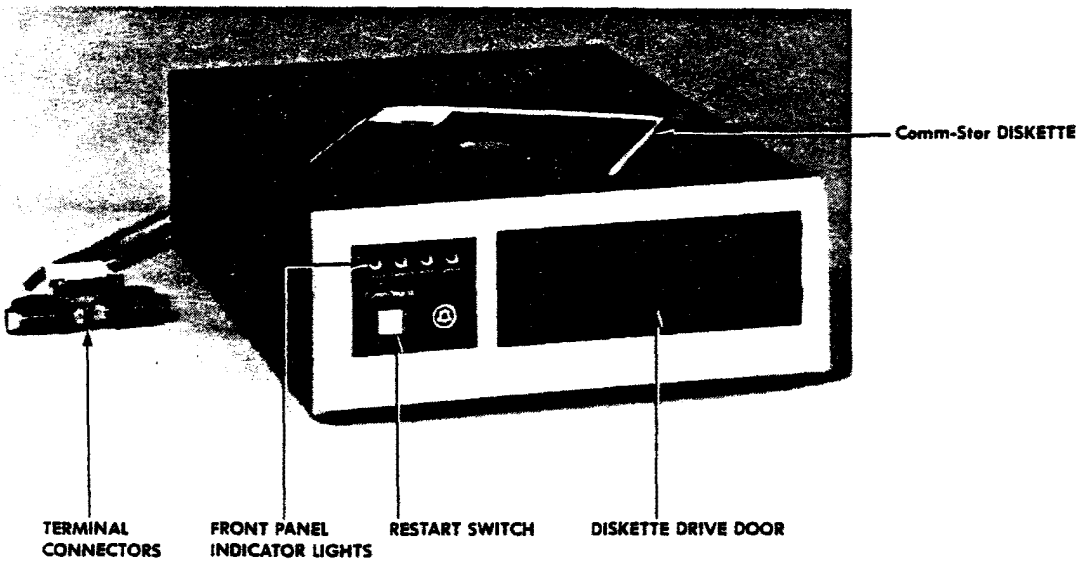


FIGURE #2-1

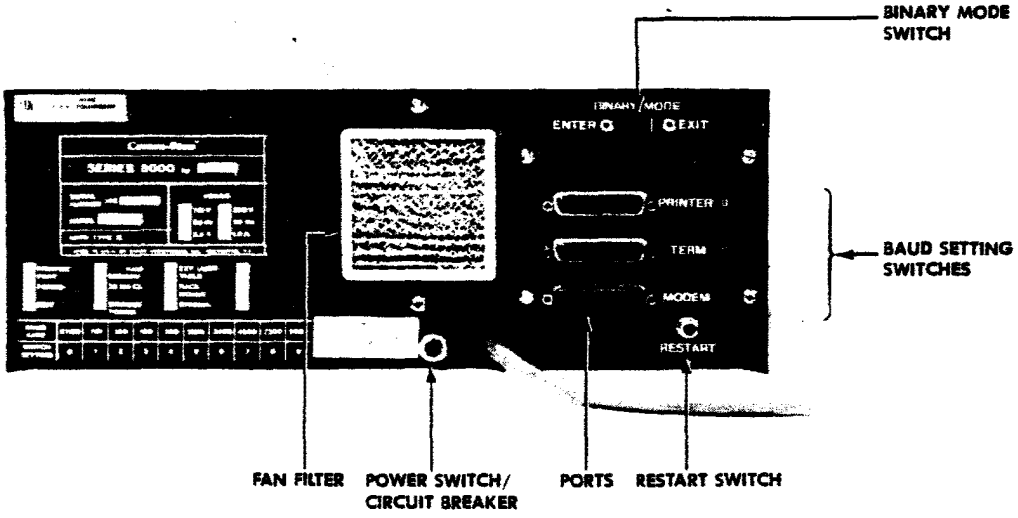


FIGURE #2-2

C. Diskette Care

A diskette must be handled with care. Improper treatment or carelessness may result in the loss of data, and possibly, many hours of work. Observe the following precautions:

1.) Never touch the exposed diskette surface. Handle the diskette only near the label.

2.) Do not write on the diskette cover; write only on the label. If possible, write on the label ***before*** placing it on the diskette.

3.) Do not attempt to clean a dirty or dusty diskette, such a disk should be disposed of.

4.) Keep the disk away from metals or other potentially magnetic materials (paper clips, etc.) A magnetic field on such materials may result in the loss of data from the diskette.

5.) Do not bend the diskette.

6.) Do not expose the diskette to extremes of heat or cold.

7.) Keep the diskette in its protective cover when not in use. Dust and liquid can damage the exposed diskette surface.

8.) Store diskettes vertically in boxes when not in use.

9.) If a bad diskette is encountered, the data may be recoverable. See Appendix A, ERROR-DISKETTE.

CHAPTER 3

COMMAND STRUCTURE

CONTENTS PAGE

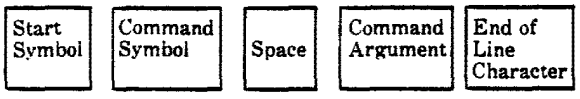
1. GENERAL

The operation of Comm-Stor is controlled by commands that are entered at the terminal. These commands consist of a series of keyboard characters: symbols, letters, and occasionally numbers. As they are entered, Comm-Stor interprets these as instructions and performs the requested action.

Comm-Stor will respond only if the proper characters are used, and then, only if they have been entered in the correct sequence. If an incorrect command is entered, however, Comm-Stor will respond by displaying a (?), indicating to the operator that the command is in error. Should this occur, check the command format to identify the cause of the error, and simply enter the proper command.

2. COMMAND STRUCTURE

The structure of a typical Comm-Stor command is shown below. It is important to remember that each command must start at the beginning (the left-most side) of a line.



Let us examine each part of the command structure in detail.

Start Symbol

This symbol, used in most commands, alerts Comm-Stor that a command follows; and it may be represented either by a .(.), or a semi-colon (;).

Command Symbol

All Comm-Stor commands are represented by a one or two-letter code, usually formed by abbreviating the command name. For example, the letter D for DISPLAY, E for ENTER, and DD for DISPLAY DIRECTORY.

The command symbol is entered immediately following the start symbol. There is ***No Space*** between the start symbol and the command symbol.

A listing of all commands described in this Guide, and their symbols, is shown in Appendix B.

Space

In most all commands, a single space separates the command symbol from the command argument. This space is created by striking the terminal space bar once, and then entering the command argument.

Command Argument

The command argument follows the command symbol and contains additional information that Comm-Stor must have in order to perform the requested command.

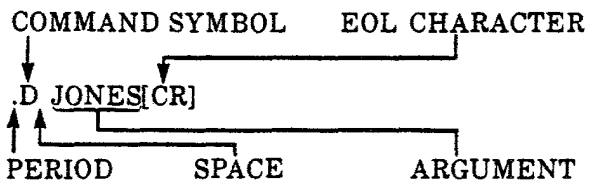
For example, in order to display a certain stored file, Comm-Stor must be told the name of the file. In this command then, the command argument is the file name.

End of Line (EOL) Character

A nonprinting End of Line (EOL) character is used to terminate all Comm-Stor commands. For most terminals, the EOL character is generated by striking the RETURN key; in others, the operator must strike both the RETURN and LINE FEED keys.

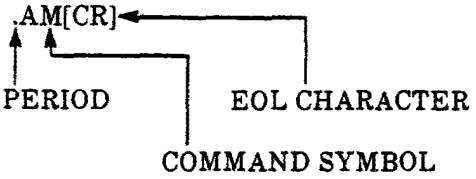
In this Guide, the EOL character is always represented by the symbol [CR], which stands for "RETURN".

An example of a command containing an argument is the request to DISPLAY the file with the name JONES. The proper command structure follows:



Some commands consist of only the period and the command symbol, and do not require that a command argument be specified. These commands are terminated with the EOL character immediately after the command symbol.

An example of one such command is ALPHABETICAL MODE (AM). It allows the operator to request Directory listings in alphabetical order. The proper structure for this command is:



3. COMMAND STRUCTURE ERRORS

Comm-Stor will not act upon an improper or incorrect command. Instead, it will inform the operator that an error has been made in the command structure by displaying an error message. Some examples of common command errors include:

1.) The omission of the period which should be placed at the beginning of the command.

D JONES[CR]

In this case, there will be no visual display. If the error occurs while OFF-LINE, Comm-Stor will alert the operator of the error by ringing the terminal bell. If the error occurs while ON-LINE, the character string will be sent to the remote device.

2.) Failure to leave one space between the command symbol and the command argument:

.DJONES[CR]

Comm-Stor will respond by displaying the error message (?) as shown below:

.DJONES[CR]

?

3.) Entering a command symbol and EOL character, but omitting the required command argument. For example, a DISPLAY command, without specifying the file name:

.D[CR]

If this occurs, Comm-Stor may respond with the error message (?), ***OR*** the wrong file may be displayed. To correct any of these command errors, simply enter the command properly.

4.) Misspelling a file name so that it appears different from the way it is stored in the Directory. For example, the file named SMITH:

.D SMETH[CR]

Should this occur, the error message ERR-NO FIND would be displayed as shown below, indicating that Comm-Stor could not find the file name that was requested:

.D SMETH[CR]

ERR—NO FIND

Again, simply enter the command again, with the name spelled properly. If the operator cannot remember the correct spelling of a file name, Comm-Stor can be requested to display the complete Directory listing. This, as well as other commands, will be described later in this manual.

4. SUMMARY

The important steps to remember when entering commands are:

1.) that commands start at the beginning of a line with a period (.),

2.) which is followed by the command symbol,

3.) next a space,

4.) and then the command argument (such as a file name) where it is required.

5.) finally, the command is concluded with an EOL command.

Examples of these command formats are shown below:

WITHOUT COMMAND ARGUMENT

Alphabetical Mode .AM[CR]

WITH COMMAND ARGUMENT

Display JONES .D JONES[CR]

The next Chapter describes the various commands used to perform Comm-Stor functions, and contains additional examples of proper command structure.

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CHAPTER 4

Comm-Stor COMMANDS

CONTENTS PAGE

The Comm-Stor commands introduced in this Guide have been placed in one of four function groups. These groups are called DISPLAY, COMPOSE, PRE-EDIT, and EDIT. These titles best describe the kinds of tasks that will be performed most frequently by an operator using Comm-Stor.

As a supplement to the written explanation and examples of the commands and command symbols, Command Flow Charts are provided at the end of this chapter which show the proper sequence and format for commands within each functional group.

2. COMPOSE/CORRECT/CANCEL

A. General

In normal Comm-Stor operation, a diskette may be placed in a "protected" status to prevent another operator from accidentally adding additional files, or changing the content of existing files in the Directory.

Therefore, before attempting to ENTER a new file, the operator must be certain that the diskette is in the proper mode to accept and store new data. The command used to place Comm-Stor in this mode is called WRITE ENABLE (WE); the proper command structure is:

.WE[CR]

Although there is no response by Comm-Stor, this command allows new data to be stored on the diskette.

If it is necessary to protect the diskette after new information has been entered, Comm-Stor can be placed in a protected status by entering a WRITE PROTECT (WP) command:

.WP[CR]

When a diskette is WRITE PROTECTED and an attempt is made to enter new data, Comm-Stor will respond with the Error Message, ERR-PROTECT, indicating that it is in the Write Protected mode.

B. Compose

The ENTER command is used to compose a new file from the terminal and store it on the diskette. The command symbol (E) is followed by the command argument (the file name) and the EOL character as shown below:

.E JONES[CR]

This is then followed by the file data. Each line of file text is terminated with a RETURN [CR]; the complete file is concluded with the End of Text symbol, CTRL/C.

The End of Text character is generated by striking the C key while holding the CTRL key down. Comm-Stor will confirm that the new file has been stored by ringing the terminal bell.

If an attempt is made to enter a file which has the same name as one already stored on the diskette, Comm-Stor will request the operator to confirm that is to store the new file ***in place of*** the existing one by responding:

SURE?

The operator may respond YES by striking the key Y, and Comm-Stor will store the new file. If the ***original*** file is to be retained, the operator should respond NO by striking the N key. It then becomes necessary to rename the new file before it can be stored.

Turn to Command Flow Chart 4-2 and review the commands and steps used for entering a new file. Take particular note of the operator reminders that are referenced at key steps.

C. Correcting Typing Errors

Operator typing errors can be corrected using either the Character Delete or Line Cancel instructions. The choice of Delete or Cancel will often depend upon where the error occurs; the procedure will depend upon the type of terminal in use. The instructions which follow apply to the most common operator terminals.

Hard Copy Printers

On most printing terminals, the Character Delete code is usually a RUB OUT or DELETE KEY, represented by a backslash (\) that appears each time the Character Delete key is struck.

To correct a typing error that has occurred near the end of a line, count the number of characters from the end of the line back to the point of error (remember to count spaces as well as characters). Strike the Character Delete key an equal number of times, and then retype the line properly.

If the error has occurred at the beginning of a line, it may be advantageous to cancel the entire line and retype it. To do this, enter the Line Cancel Character, CTRL/X, (strike the X key while holding down the CTRL key). Comm-Stor will do a RETURN/LINE FEED (advancing the page one or more lines) and expose a new area upon which to enter the entire line properly.

Cathode Ray Tube (CRT) DISPLAY

Most CRT terminals use a Backspace Character as the Character Delete code. Depending upon the terminal, this may be represented by a RUB OUT, DELETE, or BS (backspace) keyboard sequence. For each backspace command, the cursor will move one character to the left. It should be noted that the character directly under the cursor will still be visible, even though it has been deleted from the file.

To correct an error that has occurred near the end of a line, backspace the cursor to the point of error and re-enter the remaining part of the line correctly. The corrected line will be displayed, and may be stored by striking the EOL character.

NOTE: ***DO NOT*** use the terminal cursor positioning controls as a means of correcting an error.

Some CRT terminals may operate similarly to a printing terminal, in which case the cursor will not backspace, but display a backslash (\) followed by the correction.

The procedure for making a Line Cancel on a CRT Display is identical to that for a printing terminal. See the instructions stated above.

D. File Display

The DISPLAY command instructs Comm-Stor to display complete files that are stored in the Directory. The command symbol for DISPLAY is (D).

Single File Display

When requesting the display of a single file, the proper command sequence is the DISPLAY command followed by the file name. The file name becomes the command argument. For example, to display the file named JONES, JOHN, the proper entry is:

.D JONES,JOHN[CR]

Comm-Stor will respond by displaying the complete file by that name.

Multiple File Display

At certain times it may be necessary to display two or more complete files that have been stored in the Directory as a group. In these situations, the operator can specify both the range of files to be displayed, and the order in which they will be displayed.

File ranges are set using the same command arguments that have been used for displaying file names. For example, to display all complete files beginning with the file named JONES, JOHN, through the file named SMITH, PETER, simply enter:

.D JONES,JOHN/SMITH, PETER[CR]

When several files are to be displayed, the display order, either sequential or alphabetical, can be requested by placing Comm-Stor in the appropriate mode. Now, turn to Command Flow Chart 4-1 and trace the command sequence for multiple file display.

E. The Load Extension

The ability to attach supplementary information to a file name or group of file names allows the operator to more conveniently identify and sort files. This Comm-Stor feature makes use of the LOAD EXTENSION command, represented by the symbol (LE).

Extension information immediately follows the file name, and may consist of any group of letters, numbers, or symbols which the operator wants to associate with a certain range of files. For example, it may specify the date on which the file was created, a numerical file number, or even initials of the operator who created the file. To aid the operator in using extension information, the extension for a file name is always displayed with the file name on any Directory listings.

Extension information is added to a file name BEFORE the file is entered. The operator must specify the extension data that is to be used. This is done with the LOAD EXTENSION command:

.LE extension[CR]

where the "extension" designates actual data. For example, to assign the date 10-14-77 as a file extension, the command structure is:

.LE 10-14-77[CR]

Comm-Stor will automatically add this date as extension information to the names of all subsequent files as they are created.

To assign the date as an extension to the file ML-J, enter:

.LE 10-14-77[CR]
.E ML-J[CR]

The operator may now enter the contents of the file, ML-J. Directory listings will show the file name, ML-J as:

ML-J 10-14-77

File Name Extension

Leaving the Load Extension Mode

As long as Comm-Stor is in the LOAD EXTENSION mode, all file names that are entered will be assigned the designated Extension information.

The command LOAD EXTENSION, used without an argument, will allow the operator to leave the LOAD EXTENSION mode. The complete command sequence is:

.LE[CR]

F. Canceling a File

A file may be removed from the Directory by using the CANCEL (CN) command. The proper command structure is the start symbol and command symbol, followed by the file name and EOL character. For example, to CANCEL the file named JONES, the command structure is:

.CN JONES[CR]

Comm-Stor will cancel the file, and confirm that it has been cancelled by displaying the file name directly below the CANCEL command, as shown below:

.CN JONES[CR]

JONES

With the file cancelled, that position on the diskette may be used to store a new file.

G. Renaming a File

The RENAME (RE) command allows the operator to modify or change the name of an existing file. The proper format for changing a file named JONES to SMITH is:

.RE JONES/SMITH[CR]

Comm-Storr will modify the file name without altering the file content.

NOTE: If after changing the extension, the operator re-enters a file using an existing file name but different extension, the new file will replace the old file; two files with the same name but different extensions are not allowed.

Now refer to the Command Flow Chart 4-2 and review each of the command steps used to perform Correct and Cancel operations.

Modifying Extension Information

The RENAME command may be used to (1) add an extension to an existing file name, or (2) change ***both*** the file name ***and*** extension. Comm-Stor need not be in the Load Extension mode.

To change the name of an existing file JONES, assign it the name SMITH, ***and*** add the extension 10-29-78, the command sequence is:

.RE JONES/SMITH+10-29-78[CR]
.RE SAM/MIKE+10-29[CR]

The original file will be ***renamed*** SMITH, with the designated extension.

To modify ***only the extension*** on an existing file, the proper command is:

.RE JONES 01-29-78[CR]

Comm-Stor will add the modified extension information to the file name JONES, and store it in the Directory.

3. THE DIRECTORY

A. General

An extremely important Comm-Stor function is the ability to display the names of files that have been stored on the diskette. The Comm-Stor commands permit the operator to display one or more file names, and to specify the limits or range of the display. Moreover, the operator can request Comm-Stor to display names sequentially, in the order they reside in the Directory, or alphabetically according to their names.

B. The DISPLAY DIRECTORY Command

A sample Directory display is shown below:

UNUSED ENTRIES = 21

File Names	Extensions	No. of Characters	File Type
CONNELL, DONALD	10-14-77	178	
AIR RESERVATIONS	10-15-77	314	B
MAIL LIST	10-23-77	185	
ACME	10-33-77	67	F
NEW RESERVATIONS	10-29-77	285	FP

The Directory Display includes the number of available file entry slots on the diskette, the file names of all files on the diskette and any extensions, the number of characters contained in each file, and the type of each file where applicable (FORMS, BINARY, PROTECTED, etc.).

The command used to display a group or range of file ***names*** is the command DISPLAY DIRECTORY. It is represented by the command symbol (DD). An argument is used to specify the limits of the display range, and consists of file names, letters, and symbols depending upon the mode of operation.

The DISPLAY DIRECTORY command is used in both the Sequential and Alphabetical Mode, and may be used to display the entire Directory. The proper command is:

.DD *[CR]

The asterisk (*) instructs Comm-Stor that ***all*** file names in the Directory are to be displayed. The order in which file names will be displayed depends upon the display mode; sequentially if in the Sequential mode, and alphabetically if in the Alphabetical Mode.

C. Display Modes

Displaying Single File Names

To display the Directory listing of a single file name the operator enters:

.DD (file name)[CR]

Displaying Multiple File Names

When displaying more than one file name, the operator can display these names in one of two ways:

1.) SEQUENTIAL MODE: Display the names in the order in which they are listed in the Directory.

2.) ALPHABETICAL MODE: Display the names in alphabetical order.

Although all Comm-Stor units are shipped from the factory in the Sequential Mode, a previous operator may have left Comm-Stor in the Alphabetical Mode. It is important, therefore, to enter the desired mode prior to peforming operations with Comm-Stor.

Sequential Mode

To present displays in sequential order, Comm-Stor must be placed in the SEQUENTIAL MODE. The command symbol is (SM), and the proper command sequence is:

.SM[CR]

There will be no response by Comm-Stor, but all group displays requested while Comm-Stor is in this mode will appear in the order in which they were initially stored on the diskette.

Sequential Display

In addition to a display of the complete Directory in sequential order, the operator may use three command argument options to set the limits of the display range.

The DISPLAY DIRECTORY command is used, but the command argument is structured to contain range information. Note that in each example which follows, the asterisk (*) represents the word "ALL", while a slash mark (/) separates the limits of the display range. It can be interpreted as having the meaning THROUGH.

1.) For example, to display ALL Directory names from the beginning, THROUGH the file named JONES, the command structure is:

.DD */JONES[CR]

2.) To display all Directory names beginning with the name JONES through the end of the Directory, enter the command:

.DD JONES/*[CR]

Given this command, the display will begin with the file name JONES and list all remaining Directory names sequentially.

3.) Finally, to display a range of file names where the range limit is specified by two file names, the command structure is:

.DD JONES/SMITH[CR]

Comm-Stor will sequentially display all file names contained between ***and including*** the names Jones and Smith. Now turn to Command Flow Chart 4-1 and follow the command sequences for each of the display operations that have been described. Be sure to note the use of the asterisk (*) and slash (/), and that the file limits, while in the Sequential Mode, are specified by complete file names.

Alphabetical Mode

If an alphabetical listing is required, Comm-Stor must be placed in the Alphabetical Mode by entering the command:

.AM[CR]

An operator may specify the Sequential Mode or Alphabetical Mode at any time, and even though new files are added to the Directory in non-alphabetical order, they can always be displayed alphabetically.

Alphabetical Display

Three command argument options may be used to set range limits when performing Display Directory commands in the Alphabetical Mode.

The use of the asterisk (*) and slash (/) is the same as in Sequential Mode, but range limits can now be defined by letters rather than complete file names.

In order to set range limits properly, it is important to understand the process by which Comm-Stor establishes alphabetical order. It should be stressed that not all file names will be composed only of alphabetical letters. Depending upon the particular Comm-Stor application, file names may also contain one or more numerical characters such as 100, 150, 12, and so forth, or even some combination of letters and numbers, for example:

100AC5

When searching through file names, the Comm-Stor Unit will alphabetize numbers first (beginning with the smallest) and then the letters.

For example, consider the grouping of file names shown below:

100AC5 ABLE BAKER

A5 BAARNES 20A ZEBRA 1B

With Comm-Stor in the Alphabetical Mode, the display will be:

100AC5
1B
20A
A5
ABLE
BAARNES
BAKER
ZEBRA

Remember, that when operating Comm-Stor in the Alphabetical Mode, numbers will appear before letters. Numbers will be sequenced from smallest to largest, while names beginning with letters will be arranged alphabetically, in dictionary fashion.

To display all file names from the beginning of the Directory up to and including a certain letter, for example, the letter R, the command structure is:

.DD */R[CR]

Note: This command will display the Directory up to and including a file named R, if one exists.

Files with names like R1, RED, RADIO, and so forth ***will not be displayed,*** since according to Comm-Stor's alphabetical order they come AFTER a single R.

Therefore, if a display of ***all*** files beginning with the letter R is to be included, the command should be:

.DD */S[CR]

Comm-Stor will now display ***all file names*** beginning with the letter R. If a file with the name "S" exists, it will be included in the display.

The command structure used to display all file names beginning with the letter R and continuing through to the end of the Directory is:

.DD R/*[CR]

To display file names that occur between limits defined by two letters, for example, files with the names beginning with the letters A, B, C and D, the command structure is:

.DD A/E[CR]

Note that all commands for the display of file names require the use of the command DISPLAY DIRECTORY (DD).

Now turn to Command Flow Chart 4-1 and review the command sequences for the various display options. Then trace the DISPLAY DIRECTORY (ALL) command sequence for both the Sequential and Alphabetical Modes.

Displaying File Names With Extension Information

The DISPLAY DIRECTORY command is used to identify and sort file names which contain Extension information. The command format is as follows:

.DD *+extension[CR]

The asterisk (*) tells Comm-Stor that ***all*** files are to be displayed; the plus sign (+) advises Comm-Stor that only those files with the designated ***added*** extension are to be displayed.

For example, all files created with the date 10-14-77 as the extension, may be easily located by entering the command:

.DD *+10-14-77[CR]

Comm-Stor will respond by displaying:

ML-H 10-14-77
ML-I 10-14-77
ML-J 10-14-77

This indicates that the files ML-H, ML-I, and ML-J have been assigned the extension 10-14-77.

D. PRINT DIRECTORY

The PRINT DIRECTORY command represented by the symbol (PD) is used to obtain printed listings of file names when the Printer Port option is installed. Those command arguments used with the DISPLAY DIRECTORY command may also be used in completing this command structure. For example, to obtain a printed listing of all file names contained in the Directory, the command structure is:

.PD *[CR]

If Comm-Stor were in the Alphabetical Mode, the file names would be printed out in alphabetical order. They would be printed out sequentially if Comm-Stor were in the Sequential Mode.

Additional PRINT DIRECTORY commands can be developed by substituting the command symbol PD wherever the DISPLAY DIRECTORY symbol DD appears on Command Flow Chart 4-1.

4. EDITING

It is often necessary to update or revise the text of a particular file currently stored in the diskette Directory prior to transmission. File EDITING allows the operator to edit complete files, where the files are not longer than 254 lines. Editing takes place in a "scratch pad" area on the diskette (Drive 1 of a dual drive). This scratch area offers more flexibility than the normal storage area for files in that it allows the operator to insert and delete complete lines from a file, as well as perform character string searches and replacements. The operator may use the Editing feature to edit existing files or create new files.

If a scratch pad area has not been reserved and the operator attempts to edit a file, Comm-Stor will display the message:

ERR—NO ROOM (see page A-3)

The EDITING process is divided into two operations: PREPARING A FILE and EDITING A FILE.

A. Preparing the File

The CLEAR Command

The first step in preparing a file for editing is to clear that area on the diskette especially reserved for editing operations. This is done by entering the CLEAR command. The command symbol is "Q" and the proper command structure is

;Q[CR]

Note that the start symbol for the CLEAR command is a semi-colon (;), rather than a period (.).

The EDIT Command

Once this area has been CLEARed, Comm-Stor must be told that an EDIT (ED) is to be performed and given the name of the file to be edited. This file

will then be moved to the editing area on the disk. For the sample file, JONES, the command structure is:

.ED JONES[CR]

After the EDIT command has been ENTERED the Comm-Stor BUSY Light on the front panel will be illuminated for a short time. This indicates that the file is being prepared for editing. ***Do not*** enter any new commands until the light has gone out.

It is possible to move more than one file to the editing area by performing consecutive EDIT commands. For example...

.ED JONES[CR]
.ED SMITH[CR]

Comm-Stor will now move those files and place them in the editor. Remember: observe the status of the Comm-Stor BUSY Light.

Once editing has started, ***no*** additional files can be transferred to the editor.

Listing a File

Once a file has been called for editing, and prior to performing editing operations, the operator may need to view either the complete file or select portions of it in order to plan the editing steps. The LIST command allows the operator to list all the lines of a file, or just specific lines, in order to view them. The symbol for the LIST command is (L), and the proper command structure for listing all the lines of a file that has been prepared for editing is:

;L[CR]

Note that when using editing commands, the period is replaced by a semi-colon. Remember, also, when using commands which are members of the Editing family, there is ***no space*** between the command symbol and the argument.

The LIST command may also be used to list only specified lines from the text of a file. For example, consider the display resulting from the command to LIST all the lines of the file JONES, JOHN as shown below:

```
;L
JONES,JOHN
MANAGER, PROCUREMENT
ACME DATA SYSTEMS, INC.
355 PARK AVENUE
NEW YORK
NEW YORK 10012
```

Frequently, stored files will have the same format, and certain information will be stored on a specific file line, such as the title MANAGER, PROCUREMENT. If editing will involve only this line (line 2), it can be displayed singularly by entering the command:

;L2[CR]

Comm-Stor will respond by displaying the following:

```
;L2
MANAGER, PROCUREMENT
```

Editing, such as a change in title, may now be performed. A group of lines may also be listed by entering:

;L4,6[CR]

In this example, the command argument 4,6, instructs Comm-Stor to list lines 4 through 6 as shown below:

```
;L4,6
355 PARK AVENUE
NEW YORK
NEW YORK 10012
```

Turn to Command Flow Chart 4-3 and review the command structure and sequence for the three LIST operations.

To LIST AND NUMBER

It is often helpful to refer to specific file lines when editing a file. The LIST AND NUMBER command allows the operator to number the lines of a file. The command is quite flexible, and either the complete file or selected file lines may be numbered. The command symbol for LIST AND NUMBER is (N), and the proper command structure to NUMBER the lines of the same file JONES,JOHN is:

;N[CR]

Resulting in the following Comm-Stor display:

```
;N
1 JONES,JOHN
2 MANAGER, PROCUREMENT
3 ACME DATA SYSTEMS, INC.
4 355 PARK AVENUE
5 NEW YORK
6 NEW YORK 10012
```

The command structure to LIST AND NUMBER only ***specified*** file lines is as follows:

To LIST AND NUMBER only line 5

;N5[CR]

To LIST AND NUMBER lines 5 through 7

;N5,7[CR]

These line numbers are created for temporary use in file editing and will not be stored as file data on the diskette.

The proper command structure and sequence for the three LIST AND NUMBER options is shown on Command Flow Chart 4-3.

Summary

It is important to remember that the PRE-EDIT commands must be performed prior to file editing, and that these commands use a semi-colon as the start symbol.

Since the LIST AND NUMBER command increases the total number of characters in each line of the file, this may cause some overprinting on hardcopy printers, or may cause CRT displays to start a new line. The numbering of lines, however, is not altered, and they can still be used as references for editing purposes.

B. Editing the File

The EDITING commands should not be attempted until the operator has completed the PRE-EDIT command sequence. Editing commands are used to update or revise the text of a particular file. They provide greater editing capability than the Character Delete and Line Cancel commands as described earlier, and allow the operator to (1) DELETE file lines, (2) INSERT new file lines, and (3) ADD new lines to an existing file.

The DELETE Command

The DELETE command is used to delete one or more specific file lines. The command is symbolized by the letter (D), and the command argument indicates which lines are to be deleted. To delete a single file line, for example line 5, the command structure is:

;D5[CR]

When it is necessary to delete several file lines, such as line 5 through 7, the command is:

;D5,7[CR]

Note that line numbers are separated by a comma.

If a NUMBER AND LIST command was previously performed on a file, the DELETE command will cause this numbered listing to be out of sequence. Therefore, the operator must perform a ;N command again to obtain the correct listing. For example, consider the sample file JONES,JOHN, listed as below:

```
1 JONES,JOHN
2 MANAGER, PROCUREMENT
3 ACME DATA SYSTEMS, INC.
4 355 PARK AVENUE
5 NEW YORK
6 NEW YORK 10012
```

Deleting line #2 would result in a new listing, as follows:

```
1 JONES,JOHN
2 ACME DATA SYSTEMS, INC.
3 355 PARK AVENUE
4 NEW YORK
5 NEW YORK 10012
```

after a LIST AND NUMBER command was again performed.

Command Flow Chart 4-4 illustrates two operator options for performing a DELETE command.

The INSERT Command

The INSERT command allows the operator to insert one or more specific new lines into an existing file. This command is represented by the letter (I), and the proper argument contains the numbers of the new lines to be inserted. First the command and argument are entered, followed by a .[CR]. The new line information to be inserted is entered, again followed by a [CR]. The insertion is concluded with the ETX (End of Text) character, CTRL/C, entered by striking the C key while depressing the control key. The command sequence appears as follows:

```
;I5[CR]
New line to be inserted [CR]
ETX
```

The new line will automatically be numbered 5 and all subsequent lines in the file will be renumbered. The operator must again enter a LIST AND NUMBER command to obtain the revised line number listing.

Frequently it is necessary to insert more than one new line of text. Simply identify the number to be assigned to the first new line that is to be inserted, and then enter the additional new lines. The entry is completed with the ETX (CTRL/C) character. An example for inserting three new lines of text, where the first new line is to be numbered 5, is shown below:

```
:I5 [CR]

Enter first new line[CR]
Enter second new line[CR]
Enter third new line[CR]
ETX
```

Just as with the insertion of single lines, all file lines will automatically be renumbered.

The REPLACE Command

The REPLACE command is a combination of the DELETE and INSERT commands, whereby a single line or range of lines are deleted by Comm-Stor. After these lines are deleted, Comm-Stor allows the operator to insert one or more lines of data starting with the line number of the first line deleted. An example clarifies this:

```
;R18,20
```

The operator deletes lines 18, 19 and 20 and the cursor or printhead moves to the start of the next line allowing the operator to do an insert. One line, or as many lines as desired, may be inserted. After the last line is inserted, the operation is terminated with an ETX character. If two lines were inserted, they are numbered 18 and 19. Line number 21 before the REPLACE command was entered, becomes line number 20 and all succeeding lines have their number reduced by one.

The HIGHEST USED LINE NUMBER Command

The last (highest used) line number of the file in the scratch pad area is displayed by entering the command:

```
;=
```

The SEARCH Command

The SEARCH command allows the operator to search a line, a range of lines or the entire scratch pad area (up to and including the last used line) for a specified character string. If found, this character string may be replaced with a new character string.

Examples of ***search without replacement*** are:

```
;S/transportation/
;S9/transportation/
;S8,13/transportation/
```

In the first example, Comm-Stor searched the entire used portion of the scratch pad area for the string "transportation." When found in its first occurrence, the line number and line of text containing the string are displayed. In the second example, Comm-Stor searches only line number 9 for the desired string. If the string is found, the line number and line of text are displayed. In the third example, Comm-Stor searches lines 8 through 13 and displays the first line containing the string. In all three cases, if the desired string is not found, Comm-Stor returns to the idle mode and waits for the next command.

To display every line containing the search string, use the format in the following examples:

```
;S/transportation/*
;S9/transportation/*
;S8,13/transportation/*
```

The results are the same as above with the added feature that when the search string appears in more than one line of the area being searched, all lines and their line numbers will be displayed. If the search string is not found in the specified range, Comm-Stor advances the cursor or printhead to the next line.

To ***search for a string and replace the first occurrence in the file with new data***, use the format in the following example:

:S/127/125/

Comm-Stor scans the entire file until it finds the first occurrence of the numbers 127. Upon finding these numbers, it will replace them with the numbers 125 and display the line number and the new text of that line. The operator may restrict the lines that are scanned by placing one line number or a group of line numbers in the command.

To do a ***search and replace operation for all occurrences*** within the entire file or within a group of lines within that file, this format is used:

:S/seperate/separate/*

Since the word "separate" is misspelled, it is necessary to scan the entire scratch pad and correct each misspelling. Each corrected line will be displayed along with the line number. This search may be limited to a single line or a group of lines by simply adding the line numbers to the command.

Occasionally it is desired to ***change only the first occurrence of a character string in each line*** in which it appears even though the same string may appear more than once in any line. For example, a file may consist of several lines containing the following: part number, stock location code and accounting code. It is desired to change all the part numbers of the form ***5A**** to ***6B****, and it is known that "5A" never appears to the left of the position shown. Consider the statement:

:S/5A/6B/+

The plus sign advises Comm-Stor to change the desired part numbers but not to change the stock location code or accounting codes even though "5A" may appear within them. The new numbers will be displayed on the terminal as they are changed. It is important to note that if any line begins with a part number that does not contain a "5A," Comm-Stor will scan the rest of the line and replace the first "5A" with a "6B" even if it falls within the stock location code or accounting code. The operator may specify a range of line numbers over which the search and replace function is to be performed, thus avoiding those lines in which such a condition could occur.

The SAVE Command

The edited file is returned to the Directory using the command SAVE (.SV). The complete command structure to SAVE the edited file JONES, JOHN is:

.SV JONES,JOHN[CR]

Since the original unedited file with the name JONES,JOHN is in the Directory, Comm-Stor will respond.

SURE?

If the edited file is to replace the original version, the operator should reply YES by striking the Y key. Comm-Stor will automatically replace the original file with the edited one.

5. COPYING AND APPENDING FILES

A. The APPEND Command

The APPEND (A) command is used to append one or more new file lines to the text of a file. Since the lines to be added will automatically be ***placed at the end*** of the existing file, there is no need to assign numbers to the lines to be added. Comm-Stor will automatically renumber all file lines. The

proper command structure to add two additional lines to a file is:

;A[CR]
Enter the first additional line[CR]
Enter the second additional line[CR]
ETX

Remember to conclude each line with the EOL character, and the entry with an ETX.

B. The COPY Command

Opertors who have ***dual drive*** systems may use the COPY command to copy one or more files from one diskette to another. The source diskette, which is the diskette containing the information to be copied, is placed in Drive 1, and the diskette to receive the copy in Drive 2. The following is an example of the format to copy a range of files in the Sequential Mode with the indicated extension:

.C SMITH/JONES+05-17-76

All arguments allowed for the DISPLAY DIRECTORY command are valid for the COPY operation.

As the diskettes in Drives 1 and 2 may have originally been configured for different files, maximum length file names, and extensions, certain rules must be observed for files being copied:

1.) Each file name on the source diskette must not be longer than the configured maximum file length on the destination diskette.

2.) If the extension on the source diskette is longer than the configured maximum on the destination diskette, it will be truncated.

3.) If the destination diskette is configured as fixed length files, the length of the file being copied must not exceed the configured maximum file length. If this happens, or if the file name is too long, the system will respond with an error message and the COPY operation will halt.

To make a duplicate copy of the entire diskette, the operator enters the following:

.C

Comm-Stor will ask the question:

SURE?

A Y for "yes" will initiate the operation; any other entry will abort the operation.

The Directory and all files on Disk 1 will be transferred to Disk 2. If Disk 2 had any prior information on it, this information will be lost. Note that ***only user diskettes may be duplicated.***

C. Copying Files on a Single Drive System

Data files are copied on single drive systems using the Editor. Files may only be copied on a single diskette and ***not*** from one diskette to another. Additionally, a file to be copied may not exceed 254 lines of text. The procedure is as follows:

1.) Clear the Editor by entering:

;Q[CR]

2.) Move the file to be copied into the editor by entering:

.ED (file name)[CR]

3.) Copy the file onto the diskette and assign the new file name by entering:

.SV (new file name)[CR]

The file text will be stored on the diskette and listed in the Directory under the original file name ***and*** the new file name.

6. PRINTING

A. General

Two PRINT commands are available for those Comm-Stor systems which have the Printer Port option. They are used to obtain a hardcopy (paper print out) when a CRT terminal is used. The operator may use the PRINT DIRECTORY command to print Directory listings (page 4-7), or the PRINT command to print complete files. The order may be controlled by either the Sequential or Alphabetical Modes.

B. The PRINT Command

The PRINT command is used to print copies of files on a local line printer. The command, represented by the symbol (P), makes use of the same command arguments that were used to construct the DISPLAY command.

For example, to obtain a copy of all files stored in the Directory using the PRINT command, and in alphabetical order, first enter:

.AM[CR]

to enter the Alpha Mode.

Then enter the proper PRINT command:

.P *[CR]

Comm-Stor will respond by printing out the contents of all files stored in the Directory in alphabetical order by name.

Additional PRINT commands can be structured by replacing the DISPLAY symbol D with the PRINT symbol P wherever it appears on the Command Flow Chart 4-1.

C. The PAUSE and RESUME Commands

A frequent operator requirement is to scan files as they are being displayed in order to locate specific information or data. If the rate of display is too fast to allow continual reading, the operator can momentarily stop and start the display using the PAUSE and RESUME commands, respectively.

To cause the output to PAUSE, enter the command, CTRL/S, by striking the S key while holding down the CTRL key.

To resume display, enter the RESUME command, CTRL/Q, by striking the Q key while depressing the CTRL key.

7. RESOLVING ERROR MESSAGES

Occasionally an improper file name or wrong command sequence will be entered, or, conditions may exist on the diskette which prevent Comm-Stor from acting on a command.

When this occurs, an Error Message will be displayed. Five of the msot frequently encountered error messages and an explanation of their causes are listed on the next page.

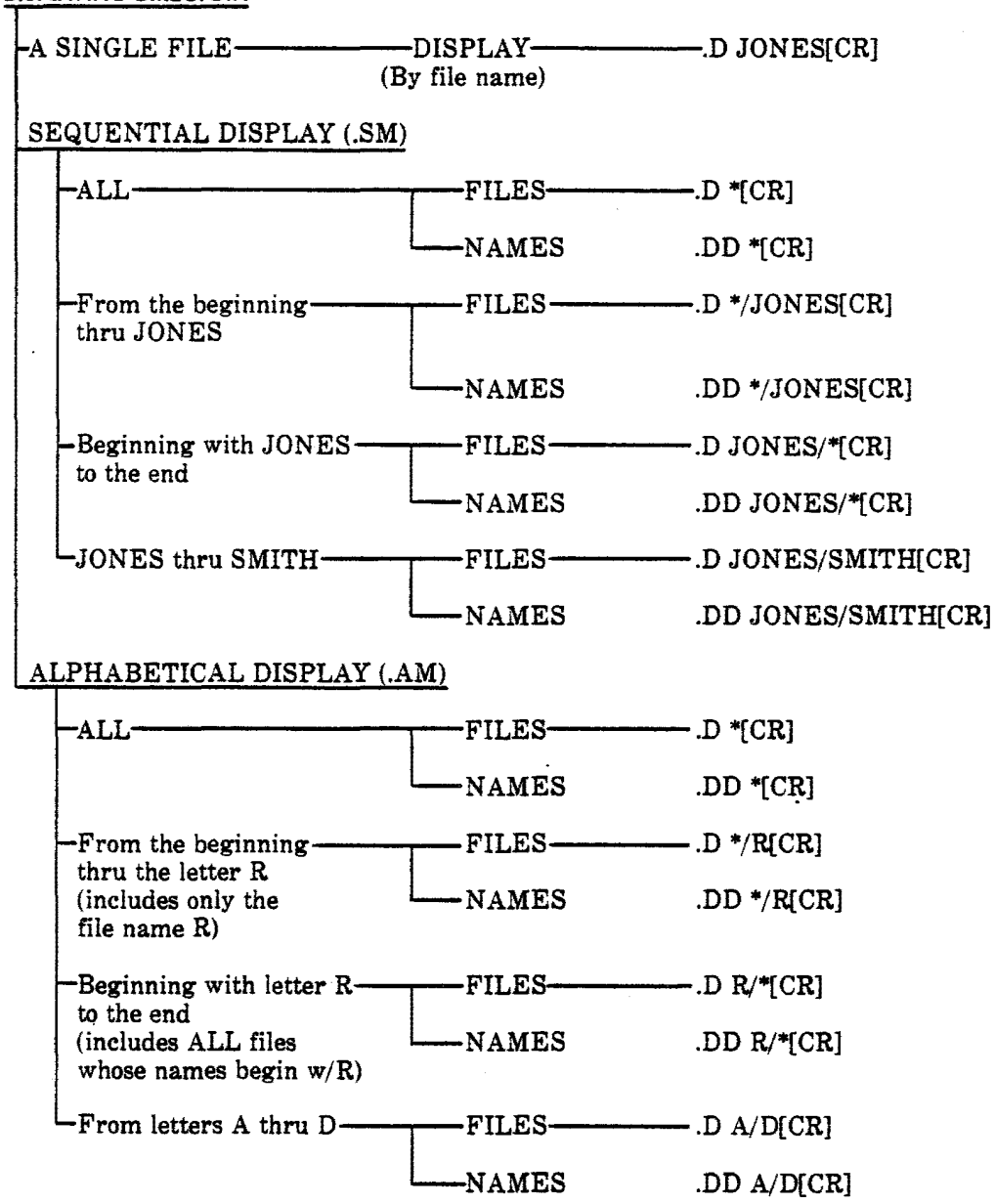
ERROR MESSAGE	EXPLANATION	CORRECTIVE ACTION
PROTECT	Operator made an attempt to write (ENTER) on a Write Protected diskette.	Command Comm-Stor to Write Enable (.WE)
ERR—FULL DSK	Indicates that the Directory is full; there is no more room on the diskette for additional files.	Either a file must be cancelled from the diskette or a new diskette must be used.
ERR—NO FIND	Indicates that there is no file in the Directory with the name requested.	Possible typing error in file name or name format. Check to see that file name agrees with the Directory entry.
?	An improper command was entered. ***Example:*** .CM was entered instead of .CN	Re-enter command, use proper command format.
BELL	When attempting to enter a command, a ringing terminal bell indicates that the operator forgot to enter a period to start a Comm-Stor command. (See Note 2 below)	Check and use proper command.

NOTE 1: Additional Error Messages are presented in ***Appendix A*** of this Guide.

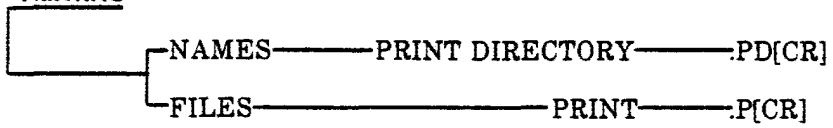
NOTE 2: Ringing of the terminal bell is used to signify other Comm-Stor operations. These are described later in this manual.

COMMAND FLOW CHART 4-1

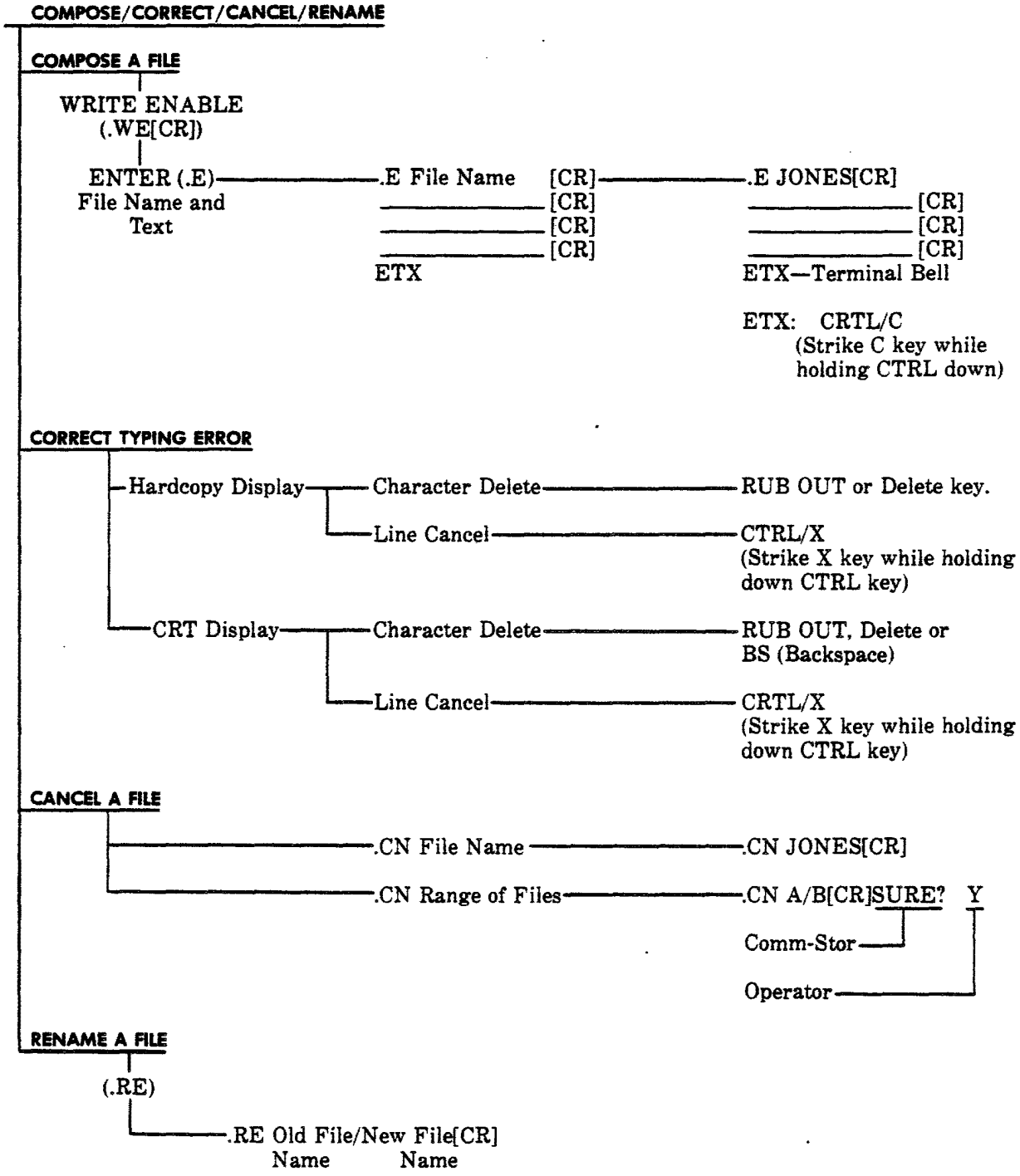
DISPLAYING DIRECTORY



PRINTING

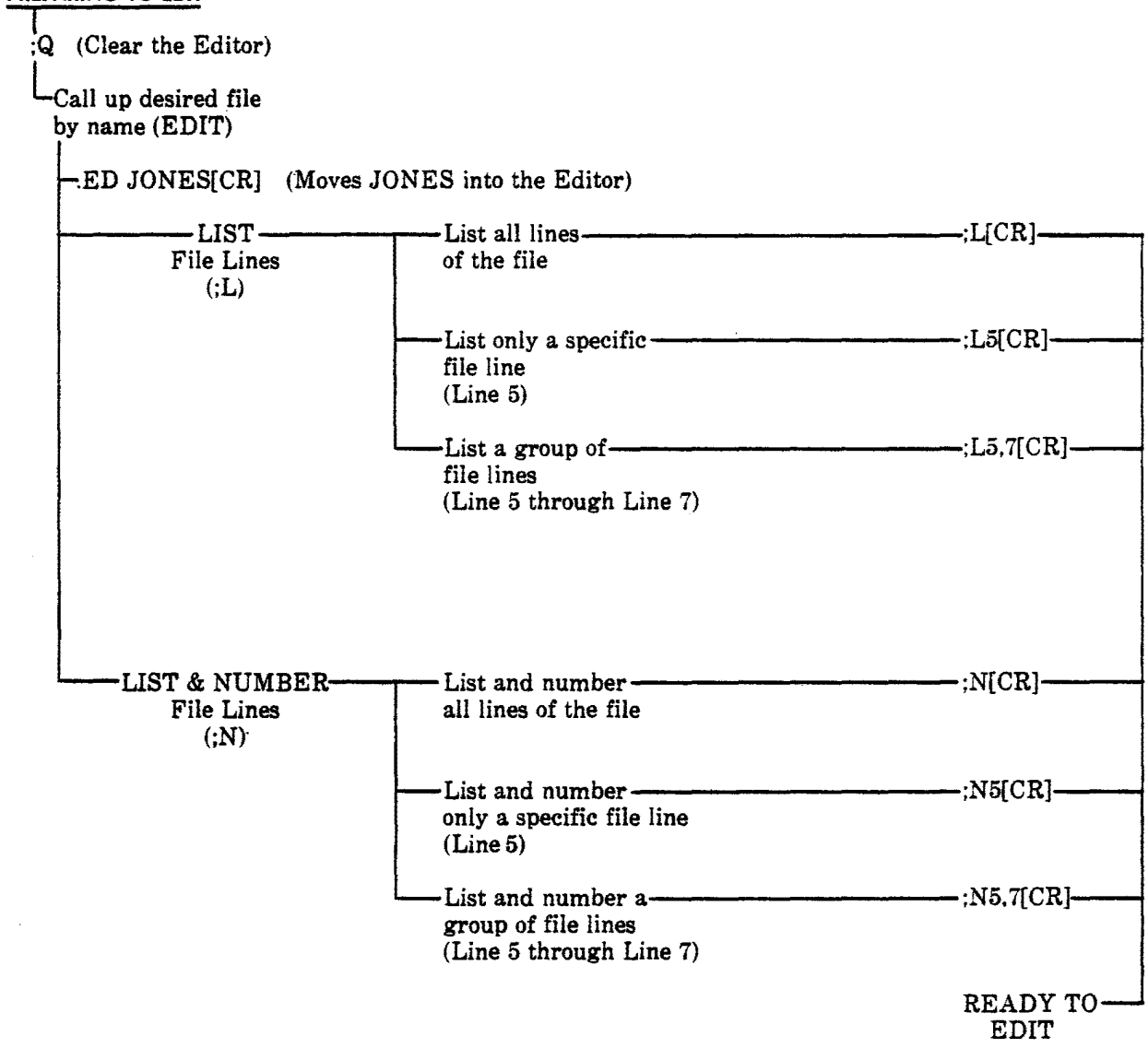


COMMAND FLOW CHART 4-2



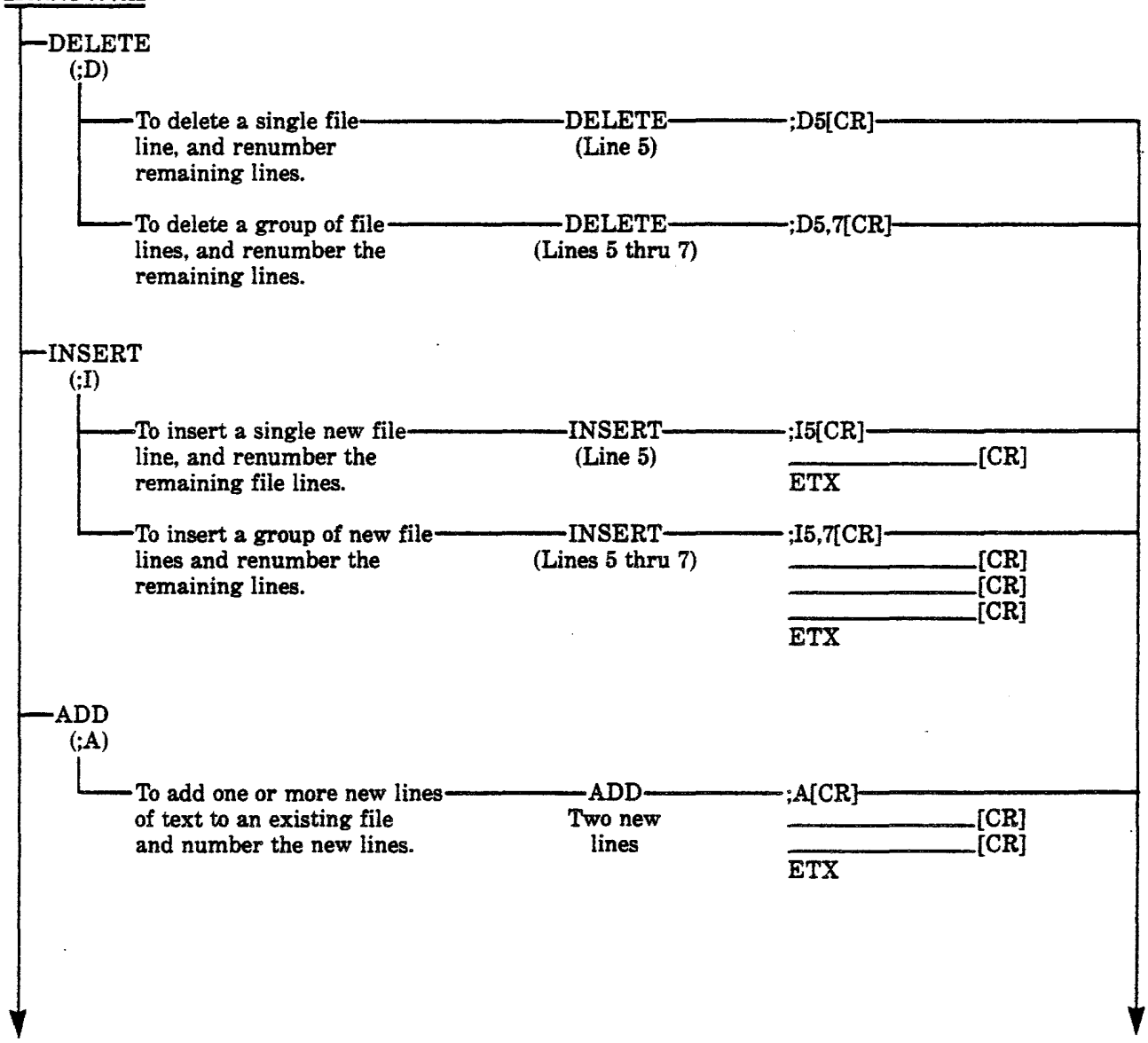
COMMAND FLOW CHART 4-3

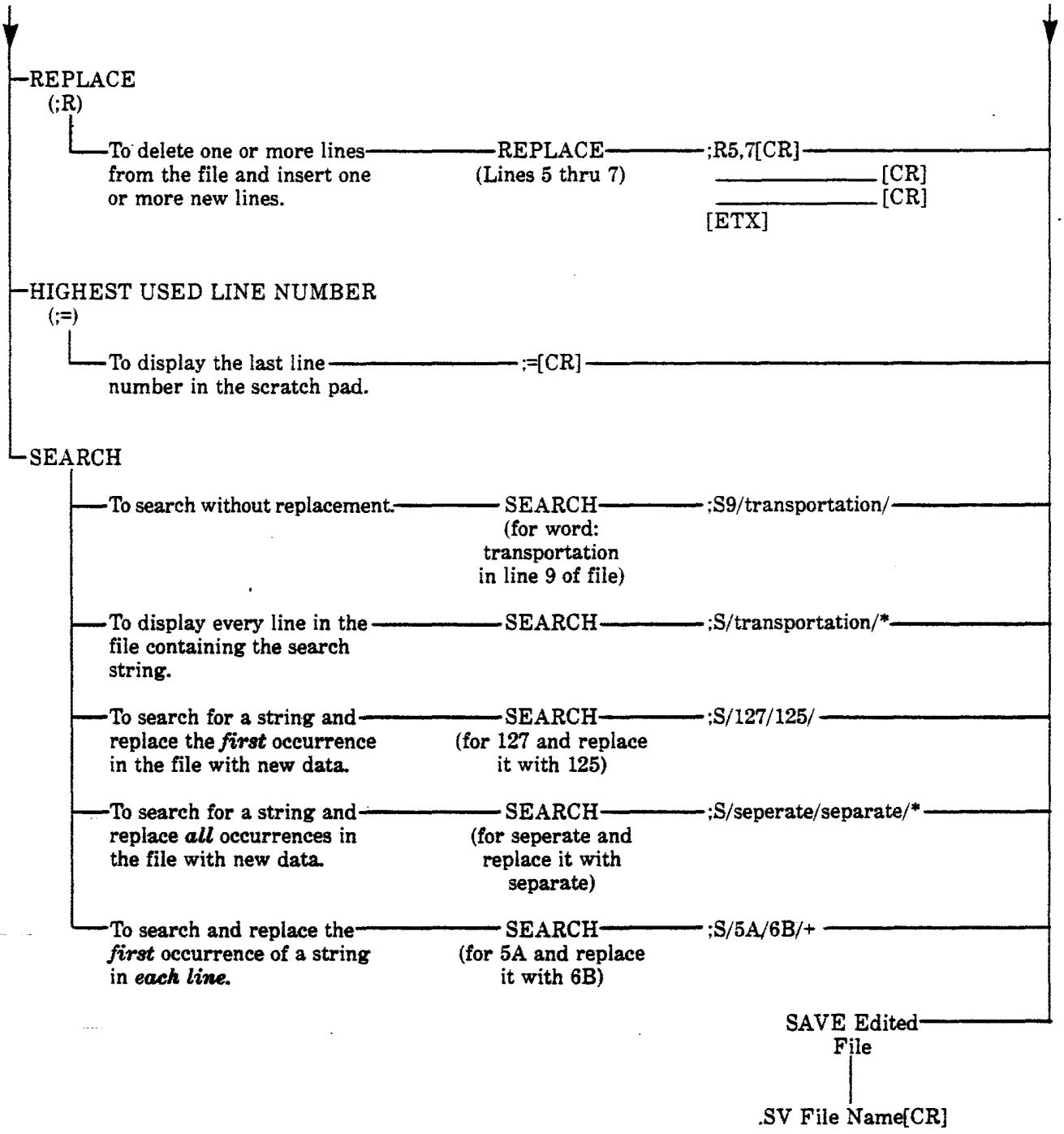
PREPARING TO EDIT



COMMAND FLOW CHART 4-4

EDITING A FILE




REPLACE
(;R)
To delete one or more lines from the file and insert one or more new lines.
REPLACE
(Lines 5 thru 7)
;R5,7[CR]
[CR]
[CR]
[ETX]
HIGHEST USED LINE NUMBER
(;=)
To display the last line number in the scratch pad.
;=[CR]
SEARCH
To search without replacement.
SEARCH
(for word: transportation in line 9 of file)
;S9/transportation/
To display every line in the file containing the search string.
SEARCH
;S/transportation/*
To search for a string and replace the first occurrence in the file with new data.
SEARCH
(for 127 and replace it with 125)
;S/127/125/
To search for a string and replace all occurrences in the file with new data.
SEARCH
(for seperate and replace it with separate)
;S/seperate/separate/*
To search and replace the first occurrence of a string in each line.
SEARCH
(for 5A and replace it with 6B)
;S/5A/6B/+
SAVE Edited File
.SV File Name[CR]

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CHAPTER 5

THE FORMS OPTION

CONTENTS PAGE

1. INTRODUCTION

The ***Forms*** package is an option that can be used in a wide range of data communications applications that would normally require tedious filing procedures. It is particularly useful when it is necessary to enter, retrieve, and transmit large volumes of information that will be stored in a standard format.

The ***Forms*** package allows the operator to ***CREATE*** blank forms, ***ENTER*** data into the form, ***DISPLAY*** a completed form, and ***EDIT*** or update operator entries entered into the form for later transmission. In addition, data from completed forms may be transferred onto preprinted forms at a line printer or terminal.

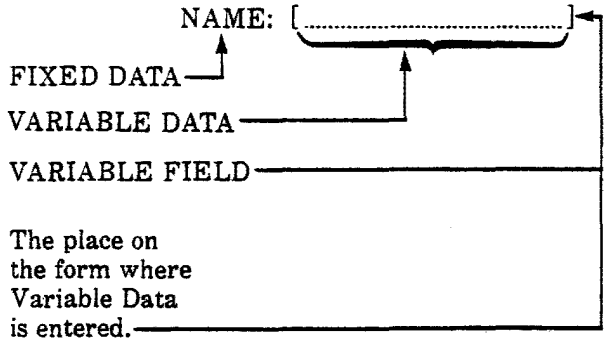
2. FORM STRUCTURE

A blank form prompts the operator with predefined headings and spaces positioned to accept desired information. The characters which make up the form itself are referred to as ***fixed data*** since the headings will be used repeatedly without change. The data or information entered into the blank spaces on the form is called ***variable data*** since it is possible that this information will be different each time the form is completed. Brackets are used to represent the beginning and end of each ***variable data field;*** an open bracket ([) represents the start of a variable field, a closed bracket (]), the end.

A simple form that might be used to store mailing address information is shown below:

```
NAME: [JOHN JONES   ]TITLE: [MANAGER]
COMPANY:  [ACME MACHINE   ]
STREET NO:  [35 MAIN AVENUE   ]
TOWN: [HOMETOWN ] STATE: [NY] ZIP: [15467]
```

In this example, form headings like NAME, TITLE, and COMPANY, etc. are ***fixed data,*** while form contents, such as the name JOHN JONES, and the title, MANAGER are ***variable data.*** Note that open and closed brackets are used to designate the beginning and end of each variable field. An example is shown below:



3. ENTERING DATA ON A BLANK FORM

To enter data in an existing form, Comm-Stor must be placed in the ***Forms Complete (FC) mode.*** The proper command is the FORMS COMPLETE symbol, .FC, followed by the name of the form onto which data is to be entered.

Using the form named ADDRESS LIST, the command structure is:

```
.FC ADDRESS LIST[CR]
```

The blank form is now prepared to accept variable field data and the cursor or printhead will return to the left margin.

Next, the operator must assign a file name to the file, or "information," that will be entered into the form. This will allow the operator to retrieve the forms data at a later time.

Assume that the file to be entered into the form ADDRESS LIST will be named AL-J. The name is assigned using the ENTER command as shown below:

.E AL-J[CR]

Comm-Stor will respond by displaying the heading of the first variable field including the open bracket.

.FC ADDRESS LIST
.E AL-J
NAME: [

The operator should now enter the requested form information beginning with the name. Comm-Stor will display variable data as it is entered. After the name has been entered, strike the Carriage Return. Comm-Stor will automatically fill in the remaining variable field characters with the DEFAULT character (spaces) and advance to the beginning of the next variable field.

If the name JOHN JONES is entered Comm-Stor will display:

.FC ADDRESS LIST
.E AL-J
NAME: [JOHN JONES]TITLE: [

Continue to enter the requested information into each variable field, ***closing out each field entry with an EOL character.***

Should the number of characters entered into a variable field ***exactly equal*** the number of variable field characters, Comm-Stor will ***automatically*** advance to the next variable field. The Return character will ***not*** be required.

It is not possible to enter a greater number of variable data characters than that for which a variable field was designed. If the number is exceeded, Comm-Stor will automatically advance to the next variable field; the overflow of characters will be placed in that field.

When the last variable field entry on the form has been completed, Comm-Stor will automatically store the file on the diskette. The operator need not enter an ETX (End of Text) character.

Additional files may be entered using the ***same*** blank form, simply by assigning a new file name using the ENTER command, as shown below:

.E AL-Q[CR]

Comm-Stor will respond by advancing to the heading of the first variable field:

.E AL-Q
NAME: [

To place file data on a ***different*** blank form, request Comm-Stor to prepare the new form by entering the FORMS COMPLETE command followed by the form name.

All files entered while Comm-Stor is in the Forms Complete mode will be recorded as forms data. A Directory listing which contains forms files will have the letter F to the right of the file name to indicate that it is forms data.

The file AL-J, for example, will appear as:

AL-J F

DISPLAYING VARIABLE FORMS DATA

The FORMS VARIABLE command is used to display only the ***variable*** data contained on a form. It is most frequently used with a line printer or terminal to permit printing variable field data in the proper structure onto blank areas of preprinted forms.

The proper command symbol (.FV) is followed by the name of the form on which the variable data was entered. To enter the ***Forms Variable*** mode for the form ADDRESS LIST, the command would be:

.FV ADDRESS LIST[CR]

Comm-Stor will indicate it is ready to present variable data associated with this form by positioning the cursor or printhead to the left. Variable data for specific files may be obtained by requesting it by file name. The proper command to obtain the variable data for the file AL-J is:

.D AL-J[CR]

Comm-Stor will respond by displaying:

JOHN JONES MANAGER
ACME MACHINE
35 MAIN STREET
HOMETOWN NY 15467

Note that only variable data has been displayed and that form field titles have been replaced by spaces. This makes it different from a regular file.

5. LEAVING THE FORMS MODE

The FORMS EXIT command (FX) is used to leave the Forms mode, and return to normal Comm-Stor operation. The proper command structure is simply:

.FX[CR]

6. EDITING FORMS DATA

Editing of variable data may be performed as it is being entered, or forms may be recalled for the purpose of editing forms information. The following techniques can be used to edit forms variable data; the choice of editing procedure will usually depend upon where the change occurs.

Note: The Forms Editing procedure is different than that for editing files. Therefore, the previously described procedure for editing will not be used when editing forms data.

A. Character Delete

The Character Delete function is used to correct typing errors ***within*** a variable data field prior to closing and storing that field; as such, it cannot be used to correct an error which has been made in a previously completed variable field. The specific procedure is identical to that used to correct file text for either hardcopy or CRT terminals. See Chapter 4.

B. Character String Search

The Character String Search function allows an operator to return to a desired line in the form by entering that sequence of two or more characters within the line known to contain the error. This command may be used either during the initial entry of data into a form or later, after a form has been called for editing.

A character string search is initiated by entering the command CTRL/Y, followed by those characters which contain the error, and then a Return character.

Comm-Stor will scan the form, looking at ***both*** fixed and variable data, until it locates the specified character sequence. When it is located, Comm-Stor will display this line, up to the first bracket, or first variable field on that line. The operator may then enter the correct data. All data within that variable field must be re-entered, not just the character in error.

For example, if the error is contained in the variable field specified by the heading NAME, the Character String could be the letters NAME. The Character String Search command is:

CTRL/Y NAME[CR]

Comm-Stor will automatically return to the first variable field after the word NAME.

C. Line Re-enter

The Line Re-enter function can be used to correct an error made in a variable field contained within the current file line.

When this type of error is detected, the operator should enter the Line Re-enter character, CTRL/Z, by holding down the CTRL key while striking the Z key.

Comm-Stor will advance to the first open bracket (first variable field) of the line in which the error was made. The correct data should be entered into the variable field which contained the error. The EOL, [CR], can be used to "tab over" variable fields that contain no errors.

D. Using the ENTER Command

A fourth method used to correct variable data anywhere on the form uses the ENTER command. To use this method, the operator must know in which variable field the error exists. Once located, use the ENTER command, followed by the name of

the file that is being displayed. The Comm-Stor Unit will respond SURE? as shown below:

.E AL-J[CR] SURE?

Enter Y for yes and Comm-Stor will automatically advance to the first character of the first variable field. The Return key may be used to systematically advance through the file until the variable field containing the error is reached, at which point the proper or corrected data should be entered.

Once the error has been corrected, the operator should strike the ETX character, and the file will be automatically stored. The remaining variable data fields will remain unchanged.

E. Using the Modified ENTER Command

The ENTER command may be used to edit or update existing forms data, and then store the revised file on the diskette under a ***new name***. The original file will be retained, intact, on the diskette for future reference.

For example, to edit the specific ADDRESS LIST forms file named AL-J, and assign the revised file the new name AL-K, the Comm-Stor Unit must be in the FORMS COMPLETE mode. The complete command sequence will be:

.FC ADDRESS LIST[CR]
.E AL-J/AL-K[CR]

File editing should then be performed using any of the accepted Forms editing techniques. When the final variable field entry on the form has been completed, the Comm-Stor Unit will automatically store the revised file on the diskette with the assigned name, AL-K. A Directory Display listing of these files will appear as:

AL-J	F
AL-K	F

7. FILLING IN FORMS WITH EXISTING FILES

In customer business applications such as order entry, the operator may enter a part number and have the Comm-Stor Unit then display a file whose file name is that part number. To perform this operation, the operator enters the file name, which in this case would be the part number, into a variable field on the form. Immediately after this name, the operator enters a control code to tell the Comm-Stor Unit that the previous data of this variable field is a file name. This control code is a CTRL/O (letter O) if the file is on Drive 1, or a CTRL/N if the file is on Drive 2. The Comm-Stor Unit goes to the appropriate drive, retrieves this file and displays it as part of the next variable data field. The last character in this file may be a Return character which will allow the Comm-Stor Unit to advance to the following variable field.

Note that when the form is originally generated, the variable field which will accept the file name (not the file) must have a character position for entry of the CTRL/O or CTRL/N character. This character is displayed as the default character on the terminal as described on page 7-6 "Creating a Form".

The operator may at any time enter an ETX character which will terminate entry of variable data into the current form. The variable data will be stored permanently on the diskette with the assigned file name. Alternately, when either a character is entered in the last position of the last variable field, or a Return is entered in the last variable field of the form, the Comm-Stor Unit will automatically store the variable data on the diskette.

To enter new data into the same form, use the ENTER or ENTER AUTOMATIC commands. To return to the standard file entry mode, the operator enters the following:

.FX[CR]

This command exits the Forms Mode. The last form will remain in the forms buffer as long as Comm-Stor is powered on. To re-enter the Forms Mode and use this form, the operator enters either a .FC or a .FV without an argument after the command.

CHAPTER 6

ON-LINE OPERATIONS

CONTENTS PAGE

1. INTRODUCTION

The operator should be familiar with the use of the remote computer on a time sharing system before reading this chapter. The Comm-Stor commands presented on the following pages are required ***in addition*** to those already required by the remote computer.

The operator can communicate with a remote station by merely establishing (i.e., dialing) the phone line connection. When a command is entered from the terminal, Comm-Stor determines whether it is a LOCAL operation or an ON-LINE operation. If it is a local operation, it is performed as described in the previous chapters. However, if it is an on-line operation, Comm-Stor passes the information without altering it.

Comm-Stor's on-line feature allows the operator to make initial contact with a remote computer, log on, and establish initial dialogue. This can be done any time the operator wishes to transfer data between Comm-Stor and the computer. If the phone connection is not properly established and the command is entered from the terminal, Comm-/Stor will alert the operator by ringing the terminal bell and advancing the cursor or printhead to the start of the next line. The operator must then re-establish the phone line connection.

CAUTION: IF THE TIME SHARING SYSTEM IN USE UTILIZES A PERIOD (.) TO PROMPT THE OPERATOR AND Comm-Stor USES A PERIOD AS THE COMMAND START SYMBOL (PAGE 3-1), THE ON-LINE FEATURE WILL NOT OPERATE. A SUPERVISOR SHOULD BE ADVISED IF THIS OCCURS AS Comm-Stor MUST BE RECONFIGURED. THIS SHOULD BE CHECKED ***BEFORE*** ATTEMPTING ON-LINE OPERATION.

2. TERMINAL OPERATIONS

A. The Echo Mode

If data entered by the operator is not displayed on the terminal during an on-line operation, the Echo mode should be used. This feature instructs Comm-Stor to "echo" the operator's keystrokes back to the terminal display. (This feature is sometimes referred to as "local copy".) Comm-Stor is placed in the Echo mode by entering:

.EM[CR]

Once this command is entered, Comm-Stor remains in the Echo mode even if the system is powered-off. To leave the Echo mode the operator enters:

.EX[CR]

NOTE: If Comm-Stor is in the Echo mode and the system is producing double line feeds (i.e. double spacing text) or creating a double echo (for example: DDOOUUBBLLEE—EECCHHOO), the .EX command should be entered.

B. The SEND DIRECTORY Command

The SEND DIRECTORY command is similar to the DISPLAY DIRECTORY command (page 4-5) except that the Directory is sent to the remote station rather than displayed on the operator's terminal. To send the ***entire*** Directory to the remote station, the operator enters:

.SD *[CR]

Comm-Stor will respond by sending the complete Directory to the remote station. Notice that the STATUS light on the front panel "flickers" as the data is transferred.

The operator may use the same arguments described in Chapter 4 for Display Directory operations when using the SEND DIRECTORY command.

C. How to SEND Files

The SEND file operation is similar to the DISPLAY file operation (page 4-2) except that the files are sent to the remote station rather than displayed on the operator's terminal. For example, to send the file named JONES, JOHN, the SEND command is entered:

.S JONES, JOHN[CR]

Comm-Stor will respond by sending the complete file, JONES, JOHN to the remote station. Notice that the STATUS light on the front panel "flickers" as the data is transferred.

D. The RECEIVE Command

The RECEIVE command allows the operator to prepare Comm-Stor to receive a file from the remote station and assign a name to the file. The file is stored on the diskette and the file name is listed in the Directory. For example, to receive the file named JONES, JOHN, the proper entry is:

.R JONES, JOHN[CR]

Comm-Stor will save the file name and prepare to receive the file data from the remote station. The BUSY light will go on at this time.

This command further permits characters entered by the operator from the terminal to be sent directly to the remote computer. The operator can now enter a command instructing the remote computer to send the data which is to be stored as the file JONES, JOHN.

For example, if the "PRINT" command is used to instruct the remote computer to send files, the command sequence would be as follows:

.R JONES, JOHN[CR] ← Instructs Comm-Stor to RECEIVE a file from the computer and name it JONES, JOHN.

PRINT ← Instructs the computer to PRINT (or SEND) a file to the operator terminal.

The operator instructs Comm-Stor that data transmission (i.e. sending files) is complete by entering a CTRL/C from the terminal. When this is entered, the BUSY light is turned off and the file is automatically closed.

NOTE: The BUSY light may go off automatically if data transmission is complete and a CTRL/C is received by Comm-Stor from the remote computer. However, this will not occur with most computers.

Comm-Stor allows the operator to combine the two commands shown above into a single command. This is done using the number (#) sign as shown below:

.R JONES, JOHN#PRINT[CR]

The PRINT command is now automatically sent to the remote computer.

Two command codes which should not be entered during a RECEIVE operation are:

CTRL/C—immediately closes the file and saves only the contents of the file received before the code was entered.

CTRL/T—resets Comm-Stor and destroys the contents of the file received before this code was entered.

The operator should note that the Character Delete and Line Cancel features (page 4-2) will not operate in this mode.

E. Monitor Mode

Data transferred using the SEND DIRECTORY, SEND or RECEIVE commands is not normally displayed on the operator's terminal. To display such data during on-line operations, the operator should enter the Monitor mode:

.MM[CR]

Comm-Stor will respond by displaying all data sent or received in the on-line mode. The STATUS lamp will "flicker" to indicate that data is being transferred.

Comm-Stor remains in the Monitor mode, even if the system is powered off. To leave the Monitor mode, the operator enters:

.MX[CR]

NOTE: When certain computers are used and Comm-Stor is in the Monitor mode, the system will operate correctly during RECEIVE operations, but during SEND operations, the terminal display may be abnormal and scrambled. This is corrected by an internal configuration change and a supervisor should be notified. Until the adjustment is made, the operator may use the system by entering a .MM command before a RECEIVE operation and a .MX command before a SEND operation.

F. How to Enter Transmission Rates from the Keyboard

This feature allows the operator to change the transmission rates of the terminal, modem, and printer from the keyboard. However, such changes should be made by the operator ***only when instructed by a supervisor.***

For example, to change the ***terminal*** transmission rate to 1800, the operator enters:

.BT 1800[CR]

To change the ***modem*** transmission rate to 134, the operator enters:

.BM 134[CR]

To change the ***printer*** transmission rate to 2000, the operator enters:

.BP 2000[CR]

NOTE: If after correctly typing one of these commands, Comm-Stor displays the message:

ERR—PREP SYS

a Baud Rate switch on Comm-Stor has been improperly positioned; a supervisor should be notified before another command may be entered.

G. The Standby Mode

This feature allows Comm-Stor to be placed in an "idle" condition by the operator by entering the following command:

.SB[CR]

The READY light will go out at this time.

Comm-Stor is returned to a "ready" condition as soon as any key is struck at the terminal. The READY light will be turned on at this time.

NOTE: The operator should use this command only when instructed by a supervisor.

CAUTION: DO NOT DISTURB THE DRIVE DOOR WHILE Comm-Stor IS IN THE STANDBY MODE. IF IT IS NECESSARY TO CHANGE THE DISKETTE AFTER ENTERING THE STANDBY MODE, A CHARACTER SHOULD BE ENTERED AT THE TERMINAL TO END STANDBY MODE. AFTER THE DISKETTE IS CHANGED, THE STANDBY MODE MAY BE RE-ENTERED.

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CHAPTER 7

ADVANCED OPERATIONS

CONTENTS PAGE

1. ADDITIONAL STANDARD FEATURES

A. Data Entry

Enter Automatic

This command allows Comm-Stor to assign incrementing file names to each file. ENTER AUTOMATIC is used where successive numbering is required within several file names. For example, with page numbers or part numbers, Comm-Stor has the facility to enter successive file names where each name differs by one digit. The file name may consist of fixed information and variable information where the variable data is alphanumeric and will be incremented by one with each successive file. The operator may place the incremented portion of the file anywhere within the file name.

Prior to entering the ENTER AUTOMATIC command, the operator must tell Comm-Stor the initial value of the file name, called the AUTO-NAME, and what portion of this file name is to be incremented. This is done through a command called LOAD INITIAL, demonstrated below:

.LI ADDRESS LIST 2<1>00

ADDRESS LIST 2 represents fixed information which will not vary from file to file. The information within the angle brackets is that portion of the file which will be incremented with each file. The 00 to the right of the angle brackets is a fixed number which does not change with each file. The net result is that the first file will have assigned to it the name ADDRESS LIST 2100 and each successive file will be incremented by 100. It is not necessary to have fixed information either before or after the angle brackets but it was demonstrated in that manner to show the flexibility of the system. The important feature is that Comm-Stor allows the operator a free format in deciding where the fixed and incrementing portions will be; the file name is entered as desired with angle brackets around the incrementing portion. It should be noted that the initial number does not have to be a number 1, but may be any desired number or letter. Please note that when determining total number of characters in the file name, the angle brackets must be counted as they are stored in internal memory. If a name which is too long is entered, Comm-Stor will display a "?".

When letters are used, the sequence from A to Z and then back to A is followed. When passing from Z to A, the digit on the left is also incremented. As an example, the file name A3Z would be followed by A4A.

Below is an example of the ENTER AUTOMATIC command. Information generated by Comm-Stor and not the operator is underlined. An End of Line character is entered by the operator after the .EA.

.EA ADDRESS LIST

The current file name is displayed next to the command. At this point, Comm-Stor is ready to receive the file text.

An attempt to re-enter a file with the same number will result in the response, SURE? The

operator should answer Y for "yes" to re-enter the file, or any other character to void the operation.

Included Mode

It is often desirable to place the file name at the beginning of the file itself. Comm-Stor has an Included Mode which automatically displays the file name. Set the system into the Included Mode by entering:

.IM[CR]

This must be entered *before* a .E or .EA command is entered. Now, when either the .E or .EA commands are used, Comm-Stor will display the file name at the start of the first line of the file.

An entry operation using the features described above appears below:

.LI ADDRESS LIST 2<1>00
.IM
.EA ADDRESS LIST 2100
ADDRESS LIST 2100

The cursor or printhead will be positioned immediately after the last character of the file name and the balance of the file may then be entered. Comm-Stor remains in the Included Mode until the operator exits this mode by entering:

.IX[CR]

Binary Mode

The Binary Data Mode is used in conjunction with the ENTER, ENTER AUTOMATIC, RECEIVE and RECEIVE AUTOMATIC (page 7-8) commands to store binary data on the diskette. Although the term "Binary Data" has been chosen to describe this mode, Comm-Stor is not restricted to handling one type of data; it is completely transparent to the type of data. This transparency means that Comm-Stor is not sensitive to special characters such as ETX, Line Cancel, Character Delete and Reset.

The BINARY DATA SWITCH (page 7-8) must be placed in the ENTER position before the operator has completed entry of the command. The simplest approach is to change this switch before the Enter or Receive operation starts. Line Cancel, Character Delete and Reset are still functional until the End of Line Character is entered. After the command line has been typed by the operator, Comm-Stor enters the Binary Data Mode. Transparency continues until the BINARY DATA SWITCH is placed in the EXIT position. At this time the file currently being built will be completed. Comm-Stor will then return to the idle condition.

The Included Mode is operational with this feature. Entry may also be terminated via the Data Terminal Ready line. (Refer to Parameters #64 and #40 of the Configuration Manual.)

B. The File Name Extension

Entering an Extension

Comm-Stor allows the operator to further define and describe files by categories or groups. This is done by adding an extension consisting of any group of numbers, letters or symbols (except /, +, #, or *) which the operator wants associated with a group of files. One example is assigning the current date to all files entered on a given day or the initials of the operator who creates the files. The extension will appear when the Directory is displayed. Files may now be sorted by extension. An extension is entered using the LOAD EXTENSION command following:

.LE 08-25-76[CR] The date is entered as an extension.

It is also possible to specify the extension in the following commands:

a.) ENTER
ex., .E JONES+DEPTC

b.) RECEIVE

ex., .R CLAMP+PARTS

c.) SAVE

ex., .SV SMITH+CLIENT

When used in this manner, the extension specified in the command string is entered in the Directory in place of any extension loaded via the .LE command.

To delete an extension, either enter a new extension or enter .LE without an argument. By entering an End of Line character immediately after the .LE command, Comm-Stor deletes any current extension. The RENAME command (page 4-4) may be used to change the extension of an ***existing*** file. RENAME may also be used to add an extension to an existing file or delete an extension from an existing file. The use of this feature will become obvious after reading the section below, which describes the use of the Directory.

NOTE: If after changing the extension, the operator re-enters a file using an existing file name but different extension, the new file will replace the old file. Two files with the same name but different extensions are not allowed.

"Don't Care" Characters

The "Don't Care" character feature allows the operator to select a group of file names from within a larger group all containing a particular number of characters. Comm-Stor must be in the Sequential Mode prior to using this feature.

For example, suppose the Directory contained a series of file names, A1 to Z999. The operator could display all files whose names are four letters long and begin with the letter B by entering:

.DD B???[CR]

The ?'s represent "Don't Care" characters (i.e. all values in this character position are acceptable). Comm-Stor will display all files containing four characters and beginning with the letter B.

To eliminate keystrokes in a long file name or if file names are not all the same length, the operator may enter a ? followed by a blank (?␣). This will fill in all Don't Care characters following the specified character value. For example:

/DD B?␣[CR]

would tell Comm-Stor to display the Directory entries for all file names beginning with "B" regardless of the length of the name.

Exclusion Searches

This method of searching the Directory allows the operator to exclude certain groups of file names when displaying the Directory.

In the example above, the operator could display the Directory leaving out the files beginning with C by entering:

.DD [CTRL/N]C???[CR]

The CTRL/N tells Comm-Stor that all file names beginning with the letter C are to be excluded. The display will not include those file names containing four characters or less and beginning with C.

Displaying the Directory

In addition to providing supplementary data about a file or group of files, the extension may also be used to sort files. Whether in the Sequential Mode or the Alpha Mode, the operator may also specify the extension when displaying the Directory. Although the extension could have been added to any of the previous examples, an example has been chosen where the entire Directory is displayed.

.DD *+04-25-76[CR]

In this command, the plus sign (+) instructs Comm-Stor that an extension follows. Comm-Stor will display all (*) Directory entries which have the extension 04-25-76. The file names will appear in either sequential or alpha order depending on the current mode of Comm-Stor. The operator must enter all characters of the extension as Comm-Stor checks each position for an exact match.

"Don't Care" characters and Exclusion Searches are applicable when searching file Directories containing extensions. An example of this might be to take all entries for the month of April 1976 with file names having the value 1000 up to but not including 2000. Assuming that Comm-Stor is in the Alpha Mode, the format would be:

.DD 100/1999+04-??-76[CR]

In this example, the 1000-1999 instructs Comm-Stor to look for files which have the name 1000 as a minimum and 1999 as a maximum, and also have an extension of 04-??-76. In this case, the question marks again indicate that any values are acceptable; Comm-Stor will select all entries for the month of April in the specified numeric range.

The operator may wish to ***omit*** all entries for April, 1976 from the display. In which case, the entry would be:

.DD 1000/1999+[CTRL/N]04-??-76[CR]

C. The RESTORE Command

When a file on a variable length type diskette is canceled, the area occupied by that file becomes free space and is available for storage of new files. New files are always stored in the largest area of free space on the diskette. Consequently, it is advantageous to combine several small areas of free space into one large area. The RESTORE command provides this capability by "squeezing" out all areas of free space that may exist on the diskette and combining them into one large area located after the last file. This is accomplished by actually rewriting the files into a continuous dense set starting at the beginning of the file area. The format of the RESTORE command is:

.RE[CR] or .RE2[CR]	.RE1[CR]	Restore Drive 1 Restore Drive 2

If the operator attempts to store a file on the diskette and the message:

ERR—FULL DSK

is displayed, a RESTORE operation may be required. This message indicates there ***may*** not be enough room on the disk to store the file. To determine whether or not a RESTORE will help, enter:

.DS S[CR] (see section D below)

If FREE SPACE and LARGEST SPACE are ***not equal,*** the RESTORE command will provide additional room for the file (and possibly others). If these numbers ***are equal,*** no space large enough for the file is available on the diskette.

NOTE: If a data entry operation is abnormally terminated (e.g., Comm-Stor is powered off), the Directory entry for that file will show zero characters and diskette FREE SPACE will be reduced to zero. Cancelling the file will automatically restore the diskette.

The RESTORE command has the same form as the RENAME command except it does not have any arguments other than the drive number. The message "SURE?" will be prompted (if the RESTORE command is requested through the terminal port) as the operation involves major rewriting of the diskette.

The amount of time required to restore a diskette is reduced when the expanded RAM memory option is available. Comm-Stor is designed to determine internally how much RAM memory is available and to use it all. If the system is configured for 1K of modem buffering, that 1K buffer area will be preserved. This will assure that a RESTORE command may be requested via a buffered modem port.

When used in the Forms Mode (Chapter 5) the RESTORE command will cause Comm-Stor to exit this mode.

CAUTION: THE RESTORE COMMAND INVOLVES A MAJOR REWRITING OF THE DISKETTE DIRECTORY FILES. ONCE THE PROCESS HAS STARTED, IT MUST NOT BE INTERRUPTED UNTIL IT IS COMPLETED. THE RESET CHARACTER IS DISABLED DURING THIS PROCESS. IF A DISKETTE ERROR SHOULD OCCUR DURING THE PROCESS, DATA LOSS WILL BE LIKELY. DO NOT PRESS THE RESTART BUTTON DURING THIS OPERATION.

D. The DISPLAY STATUS Command

The status of the system is displayed by using the following command:

.DS[CR]

Comm-Stor will respond by displaying system and transmission errors, disk parameters, selected modes, and ready and write protect conditions. Disk parameters will include the maximum number of characters in the file name, the maximum number of characters in the extension, the maximum number of characters in a line, the maximum number of characters in the file and the number of lines per page. Modes will include Alpha or Sequential, Monitor, Echo, Included File Name, and Forms. The command .DS2 will display all the above information for the User Diskette in Drive 2.

A detailed description of the status display is contained in Appendix D.

Display Directory Status, Short Form

(Applies to variable length file diskettes only)

When using diskettes configured for variable length files, the operator frequently needs to know the size of the largest free space and total free space. This information can be displayed at the terminal by use of the DISPLAY DIRECTORY STATUS, SHORT FORM Command (.DS S). An example of the use of this command is as follows:

.DS S[CR]

UNUSED ENTRIES = 95

FREE SPACE = 235136

LARGEST SPACE = 233216

Note that the DISPLAY DIRECTORY STATUS command is a combination of the DISPLAY STATUS command (.DS) and the character S. The S character may be either upper or lower case and is not configurable. A "long" form of the DISPLAY DIRECTORY STATUS command is available (.DS L) which is used to display the Directory in a special format. This command is generally not used during normal operations but is described in detail in Appendix E.

E. The User Command Table

The User Command Table references command sequences maintained in memory via a trigger character. This character may be entered from the terminal or through the modem port. The command sequences and their respective trigger characters are entered into the table during the configuration process (Configuration Parameter #140).

Consider the example below:

[⌃A] .LE DATALOG[CR]
LI<001>[CR]
.AM[CR]
.RA[CR]
.[CR]

The [⌃A] at the front of the table is the trigger character that the operator must enter from the keyboard to cause the string of commands to be executed. When the [⌃A] is entered, the system will execute the first command which says Load Extension with the value DATALOG. The Carriage Return indicates the end of the first command. Comm-Stor will then execute the next command which says to load the Initial Value of the Automatic File name with a value of 001. The Carriage Return again signifies the end of the command.

NOTE: If the [⌃A] had been omitted at the beginning of the table, and Comm-Stor was configured for a self-start, it would have immediately begun to execute the commands in the table when powered on or restarted.

The next command in the string places Comm-Stor in the Alphabetic Mode. The final command says to Receive Automatic. Comm-Stor will prepare to receive the first file under the file name "001". These commands are executed exactly as if an operator had entered them manually from the terminal.

The period followed immediately by a Carriage Return at the end of the table is a special command which causes Comm-Stor to "backup" two commands in the Command Table and execute them again. This forms an endless loop of alternating commands of Alphabetic Mode and Receive Automatic. Comm-Stor will receive as many files from the external device as are sent to it, until the diskette is filled. This feature is particularly valuable when using Comm-Stor as a data logging device without requiring operator control at the terminal.

In the above example, only one trigger character and a single command string is shown. The operator may specify many trigger characters, each having its own command or command string by placing the trigger character immediately before the first command and its associated command string. The trigger characters act as separators between command strings.

Example:

/[⌃A].DD *[CR]
[⌃B].DS[CR]
[⌃D].EX[CR]
.MX[CR]
.IX[CR]
.FX[CR]

Jump Command

The User Command Table may also be set up to execute commands in a different order than they appear in the table. This is done by the use of a JUMP command. Consider the following table:

```
/[^A].EA[CR]
[^B].LE DEMO[CR]
.[^A] [CR]
[^P].LE TEST[CR]
.[^A] [CR]
/
```

The JUMP command consists of the sequence: Period, Control Code, Return (lines 3 and 5 above). The control code is the trigger character of the command it is desired to jump to.

When the operator enters a [^A], an ENTER AUTOMATIC operation is performed. A[^B] causes a LOAD EXTENSION DEMO to be executed; the table then jumps back to [^A] and executes the ENTER AUTOMATIC. The [^P] operates similarly except that a different extension is assigned. Any number of jumps may be implemented but caution must be exercised when selecting trigger characters. Only characters which are not used for any other purpose may be selected. Escape sequences may also be used as triggers; however, they may not be used to initiate jumps inside the command table. The user should enter the configured Escape character (Parameter #14) followed by any ASCII character.

User Command Table Prompt

Prompting messages may be stored in Comm-Stor command strings in the User Command Table. The prompting message is entered into the User Command Table in the following format:

```
.[XPROMPTING MESSAGE][CR]
```

[CR] = Carriage Return is keyed in at the terminal.

Brackets ([], Configuration Parameters #127, #128) define the start and finish of the Prompting Message. X = Port through which message will be output. Type a T for terminal, M for modem, P for printer. If none of the three ports are specified, the prompting message will automatically default to the terminal port.

If the operator wishes to put a Carriage Return in the Prompting Message, the [CR] must be preceded by a [character (Parameter #127).

Example:

```
.[XPROMPTING MESSAGE[][CR]
```

User Command Table Fill-In Feature

The User Command Table will accept commands where the argument portion of the actual command is ***variable.***

When a fill-in command is taking place in the User Command Table, Comm-Stor will accept the argument of that command from either the terminal or modem port. Only one fill-in field is allowed per command string:

```
..Z__[X][CR]          or
.ZZ__*/[X][CR]        or
.ZZ__ABLE+[X][CR]
```

Where: ZZ = actual command; [] = the variable portion of the command, X = input port through which Comm-Stor accepts the argument or completion of a Command: T for terminal, M for modem.

Examples:

```
/[^A].D__[T][CR]
[^B].LI__<001[M]>[CR]
/
```

The Fill-In Command feature is commonly used in combination with a Prompting Message.

Example:

```
[^A].[TTYPE FILE NAME][CR]
.D__[T][CR]
```

In this example, whenever [^A] is entered from the terminal or modem the Prompting Message "TYPE FILE NAME" appears on the terminal. The next command, .D__, puts Comm-Stor into the display mode; it will then wait for the argument of the command to be entered through the terminal.

The actual command, .D__, will not appear on the terminal. After the argument and a Carriage Return have been entered, Comm-Stor will display a file with the name entered after the Prompting Message.

Edit Function

After the operator enters the Configure command (.C140), the User Command Table edit function is available for configuring the User Command Table. Instead of retyping the entire table every time a change is made, it is possible to edit portions of the table. The general format of the edit command line is two framing characters, the search string, a framing character, the replacement string, and a final framing character:

//Search string/Replacement string/

After the third framing character, the Configurator attempts to locate the search string, beginning at the start of the User Command Table. If an identical search string is located, it is deleted; if the string cannot be found, a "?" is printed on the terminal. If ***three*** framing characters in a row are entered, specifying a null search string, the replacement string will be inserted at the start of the User Command Table. Otherwise, the replacement string will be inserted into the table in place of the search string. If a null replacement string is specified, the search string is deleted and nothing is inserted. If a mistake is made entering a character, the Rubout (or Delete) key may be used to delete the previous character in the string. Control returns to the "." prompt when the edit is completed.

The search string and replacement string have maximum lengths of 127 characters each; however, they do not need to be the same length.

F. Creating a Blank Form

Since a blank form is a structured file, one designed with special headings and spaces, it can be created by using the ENTER (.E) command. For example, a form might be named ADDRESS LIST; the proper command structure to create this form is:

.E ADDRESS LIST[CR]

Next, the form itself should be entered, using the space bar to position headings and variable fields. Each fixed data title is followed by an open bracket ([) to designate the beginning of a variable field. Then, the variable field is established by entering "dummy" characters for each desired character position of the variable field. For example, to establish a variable field of 20 characters in length, 20 "default" characters would be entered. The "default" character is entered once for each form and is placed in the first character position of the first variable field, as shown below:

NAME: [_]
↑
"DEFAULT" character position

Since this character will be displayed in every variable data position that is not used when the form is filled out, most operators use the SPACE character as the default character.

Any character may be used as a "dummy" to fill in the remaining variable data field positions, since the use of the space bar as the default character will make these characters nonprinting.

The use of a space for the "default" character and the letter "X" as a dummy for all remaining variable field characters is shown below:

```
.E ADDRESS LIST[CR]

NAME: [ XXXXXXXXXXXXX]TITLE:
      [XXXXXXX] [CR]
COMPANY: [XXXXXXXXXXXXXXXXX] [CR]
STREET NO: [XXXXXXXXXXXXXXXXXX]
           [CR]
TOWN: [XXXXXXXXX] STATE: [XX]
ZIP:   [XXXXX] [CR]
[ETX]
```

As in the creation of regular files, the ETX (CTRL/C) character is used to signal the completion of the form. Comm-Stor will automatically store the new form under the assigned file name.

It is important to remember that variable data fields cannot extend over the end of the line. If variable data will be more than one line in length,

close the field on the current line by entering an EOL character, and resume the variable field on the next line. For example:

NAME: [XXXXXXXXXXXXXXXXXXXX][CR]
[XXXXXXXXXXXXXXX]

2. ON-LINE OPERATIONS

A. Remote Computer Commands

As with the terminal port, Comm-Stor accepts commands from the modem port and performs the corresponding operation. All Comm-Stor commands may be input from the modem port except the following:

.E Enter
.EA Enter Automatic
.ED Edit
.SV Save
.BT Set Terminal Bit Rate
.BP Set Printer Bit Rate
and commands starting with a semicolon (;)

The Character Delete and Line Cancel features may not be used through the modem port on commands or data. Additionally, no response will be sent to the remote computer should a system error occur.

Note also, that although the operator may select the Forms Complete or Forms Variable Mode, forms operations with the modem port is limited to sending either complete forms and/or the forms data. Forms data may be entered only through the terminal port.

Local operations such as .PD (Print Directory) may be requested (and will be performed) using commands entered through the modem port.

B. The SEND STATUS Commands

The SEND SYSTEM STATUS and DIRECTORY STATUS operations are similar to the DISPLAY SYSTEM STATUS and DIRECTORY STATUS operations with the exception that the information is sent to a remote location via the modem port instead of being displayed on the terminal. The formats for these commands are:

.SS[CR] Send System Status
.SS S[CR] Send Directory Status, short form
.SS L[CR] Send Directory Status, long form

C. The RECEIVE AUTOMATIC Command

The RECEIVE AUTOMATIC feature works in the same manner, as the ENTER AUTOMATIC feature. First, assign an initial file name by using the .LI command. Then enter the following command:

.RA[CR]

Comm-Stor will automatically assign the proper file name and current extension. The Included Mode is not functional during the RECEIVE AUTOMATIC operation and the file name cannot be stored as part of the file. The Receive Automatic Mode is terminated by an ETX character from either the remote computer or the terminal.

The Character Delete and Line Cancel codes are not operative in this mode. These characters will be stored on the diskette as normal data.

D. The Binary Data Switch (Receive Mode)

This facility is used with the RECEIVE and RECEIVE AUTOMATIC commands. The BINARY DATA SWITCH is placed in the ENTER position before the RECEIVE or RECEIVE AUTOMATIC command is issued. After all binary data has been received, the operator places the BINARY DATA SWITCH in the EXIT position to terminate the file. The operator may also terminate the file by entering an ETX at the terminal. This character is not stored in the file. The Included Mode is not functional during this operation.

E. The ATTACHED INSTRUCTION Feature

At times, the operator may wish to issue commands to the Comm-Stor Unit and the remote location at the same time, such as requesting the remote location to send a file while at the same time telling the Comm-Stor Unit to receive this file. An example of the commands the operator may wish to send is:

LIST BASIC[CR]
.R BASIC1[CR]

Here, the operator is requesting the computer to send a file named BASIC which Comm-Stor will receive and store on the diskette with the file name BASIC1. However, this command format will create two problems.

First, if the instructions are entered as two input lines as illustrated above, the computer may start sending the file BASIC before the operator has completed entry of the RECEIVE command. This would result in the loss of the initial part of the file while Comm-Stor was preparing to receive this file. This is corrected by entering the above two lines in the opposite order allowing Comm-Stor to be prepared to receive data before it is sent by the computer.

Second because the computer usually echoes back information sent to it, Comm-Stor would store the command "LIST BASIC" as the initial part of the file. To avoid this problem, the operator uses the following format to combine both commands:

.R BASIC1#LIST BASIC[CR]

Comm-Stor treats all information after the # as information to be sent out the modem port ***but not acted on locally.*** This procedure first interprets the RECEIVE command and prepares Comm-Stor to receive the file; then sends the remainder of the line out of the modem port. All information after the # is called an ATTACHED INSTRUCTION. The maximum length of an Attached Instruction is 35 characters. The Attached Instruction may also be used with the .RA, .SD, .S, and .SS commands. When used with commands that do not have an argument, the Attached Instruction uses the following format:

.SS#SAVE STATUS[CR]

The Attached Instruction may also be received from the computer through the modem port.

F. AUTO ANSWER and AUTO DISCONNECT Operations

Comm-Stor is able to automatically answer telephone calls and disconnect at completion of the operation. To use this capability, the modem is left in the Auto Answer Mode (this is done by pressing a button normally labeled AUTO on the modem). When a call is received with the AUTO key depressed on the modem, Comm-Stor automatically answers the call and begins to receive data. When Comm-Stor observes that no data has been transferred in either direction for a configured period of time, or it senses a disconnect, it performs an AUTO DISCONNECT operation instructing the modem to terminate the telephone call then placing it in an idle state ready for a future call.

G. The Modem Buffer Feature

Data input to the modem port from a remote site may be BUFFERED in Comm-Stor. Buffering allows the operator to "type ahead" while modem operation is finished, characters that were received (and buffered) from the modem port are acted upon. without the need of intervening delays to allow time for Directory search operations, diskette seeks, closing files, etc.

Modem buffering is often used to receive and hold commands input from the modem port while local operations are in progress. As soon as the local operation is finished, characters that were received (and buffered) from the modem port are acted upon.

If for some reason the amount of buffer space is not configured large enough and the buffer overflows, Comm-Stor will reset and output an "ERROR OVERRUN" message.

H. Monitor Mode

Data that is sent out the modem port when using the .SD, .S, or .SS commands, or data received when using the RECEIVE or RECEIVE AUTOMATIC commands are not normally displayed on the terminal. To display this data, enter the MONITOR MODE using the command:

.MM

In the Monitor Mode, all data sent or received via the modem port is also displayed on the terminal. Exit this mode by entering the following command:

.MX

Comm-Stor remains in the Monitor Mode until the MONITOR EXIT command is entered.

The operator should note certain characteristics of the Monitor Mode:

1.) When sending files to a remote location while the terminal is set at a higher transmission rate than the modem, the terminal will display a portion of the file then wait for the modem to finish transmitting this data. Transmission to both ports will resume and the terminal will again wait for the modem to catch up.

2.) The STATUS light on the front panel will illuminate at half brilliance during transmission to signfiy that data is being transferred.

3.) If the terminal is operating at a slower transmission rate than the modem while in Monitor Mode, the rate of data sent out the modem port will be reduced to coincide with the slower terminal rate.

I. Comm-Stor to Comm-Stor Operations

A local Comm-Stor is unable to send a command which begins with a period to a remote Comm-Stor through the modem because it will be interpreted locally as a local command. To eliminate this problem, Comm-Stor accepts either a period or a comma received from the modem port to signify the start of a command. A period signifies the start of a local/remote command; but a ***comma*** signifies the start of a command which will be interpreted only by the remote Comm-Stor unit. An example follows:

,S Smith[CR]

Because this command begins with a comma, the local Comm-Stor does not interpret it as a command but allows it to be sent out the modem port to the remote Comm-Stor unit. Receipt of this command at the remote Comm-Stor initiates a SEND operation. The file named Smith will be sent to the local Comm-Stor unit and displayed on the terminal there. A comma may be used in place of a period for all commands acceptable at the modem port (see page 7-8 "Remote Computer commands").

When conversing with a remote Comm-Stor unit, both systems should be placed in the Echo Mode. This is done by entering:

.EM[CR] (places local Comm-Stor in Echo Mode)
,EM[CR] (places remote Comm-Stor in Echo Mode)

The Echo Mode allows the operator to see data which is entered from the terminal. It also adds line feeds after carriage returns to avoid overprinting on the terminal display (local and/or remote). If data received overprints a line, the remote Comm-Stor is not in the Echo Mode; the ,EM command should be entered again.

It is recommended that the operator verify that both systems are in Echo Mode by requesting the remote Comm-Stor to SEND STATUS. Enter:

.EM[CR]
[CR]
,EM[CR]
,SS[CR]

If the status data is received without overprinting, both systems are in Echo Mode.

3. THE TERMINAL BUFFER FEATURE

Comm-Stor may be configured to support buffering of data input from the terminal. Buffering will allow the operator to "type ahead" while operations such as directory searches, modem or printer operations, etc., take place. For example, if the operator entered the command .DD * while Comm-Stor was active printing a file, as soon as the print operation was finished, the .DD * command would be executed. However, data entered at the terminal ***while a file is being received*** would be immediately sent out the modem port, unless it is an ETX character which would terminate the Receive operation. Terminal buffering should also be implemented when certain terminals are used in a batch mode.

A maximum of 4K (4096) characters of buffer space is available which can be divided for use as buffer space for the terminal and modem. Buffer space is allocated (via the Configuration process) in increments of 1K characters. Thus, the minimum buffer space allowed would be 1K leaving 3K available for the modem port. The maximum space allowed would be 4K leaving none available for the modem port.

If for some reason the amount of buffer space is not configured large enough and the buffer overflows, Comm-Stor will be reset and the error message, OVERRUN, will be displayed at the terminal. Refer to the Comm-Stor Configuration Manual (Appendices G and H) for a complete description of Buffering and the Expanded RAM Memory option.

CHAPTER 8

IF TROUBLE OCCURS

The most common trouble conditions are indicated by Comm-Stor Error Messages. However, other situations may arise during data entry, communications or retrieval operations that are not indicated by an Error Message. This chapter is meant to help the user and operator evaluate many of these situations. A supervisor should be notified if further technical assistance is needed.

Those "possible causes" marked by a (†) should be reported ***immediately*** to the Telephone Company Repair Bureau. Additionally, if any other problems ***persist***, the Telephone Company Repair Bureau should be notified.

PROBLEMS: ON-LINE OPERATION	POSSIBLE CAUSE(S):	CONFIGURATION PARAMETERS TO BE CHECKED
1. Comm-Stor does not respond at all.	a,b,c,d,e,f,g	3,13,19,34,35,36, 39,77,78,140,141
2. Drive door will not close.	j,l	
3. READY light does not illuminate.	a,b,j,k	
4. Terminal does not display asterisk (*) when powered on or RESTARTED.	d,h,n	23,24,25,26,34 37,38
5. Comm-Stor does not accept commands.	a,b,c,d,g,h	3,35,36,37,38,39, 77,78
6. STATUS light does not go off.	d,m	
7. Comm-Stor does not respond to RESET command.	b,c,d,h	12,35,36,52,53
8. Characters are replaced with question marks (?).	g,m,y	32,37,38
9. Terminal displays random characters.	m,n	37,38,58,59
10. Directory contains meaningless characters.	z	
11. Files listed in Directory cannot be accessed (ERR—NO FIND).	i	
12. BINARY file displayed on terminal.	x	
PROBLEMS: ON-LINE OPERATION		
1. Comm-Stor cannot converse with remote device.	g,n,o,p,s,w,y	2,4,5,8,9,10,11, 17,18,19,20, 41-51,58,59,138, 139,142,143,149
2. Comm-Stor performs operations before receiving commands from operator.	q	140,141,147

*Refer to "How to Configure...Comm-Stor II" and Appendix G in this manual.

PROBLEMS: LOCAL OPERATION	POSSIBLE CAUSE(S):	CONFIGURATION PARAMETERS TO BE CHECKED
3. Comm-Stor does not accept operator's commands.	g,n,o,p,r	77,78
4. Terminal displays random characters during Send *file* operations.	m,t,u,w	34,148
5. Double characters displayed on terminal during conversation.	t	34,148
6. Remote device rejects data or disconnects phone line during Send operations.	v,w	19,20,44,46,47, 48,49,50,51

POSSIBLE CAUSES:

a. Power not supplied to Comm-Stor. Connect to AC outlet. Depress power switch/circuit breaker on rear of unit.

b. Terminal LOCAL/ON-LINE (S/R key) switch in LOCAL mode. Place in ON-LINE mode.

c. Cable from terminal or modem not connected. Check port and device connections.

d. † Battery for configuration memory is dead. STATUS light will be on. Insert REFRESH diskette if available; push RESTART. Normal operations may be performed until Comm-Stor is ***powered-off***. System REFRESH is required until battery is replaced.

e. † Terminal or modem device defective.

f. † Comm-Stor unit defective.

g. Wrong REFRESH diskette used to configure CommStor. Reconfigure with correct REFRESH diskette or CONFIGURATION diskette.

h. BINARY SWITCH in "ENTER" position. Terminal will display a "B". Slide switch to EXIT position.

i. Nonprinting characters (e.g., trailing or leading spaces) imbedded in Directory listing. Reenter file name.

j. Diskette incorrectly inserted. Reinsert diskette (Refer to Chapter 2 for proper procedure for inserting diskette).

k. Unit in STANDBY MODE. Strike any keyboard character.

l. † Drive door lock mechanism damaged.

m. Parity configured incorrectly. Reconfigure with CONFIGURATION diskette.

n. Baud rate set incorrectly. Reset thumbwheel switch at appropriate port to required setting or enter required baud rate from keyboard.

o. Dataset (modem) not on-line. Redial remote system.

p. † Dataset (modem) not functioning properly.

q. Miscellaneous Control Code received through modem port has triggered User Command Table. Enter RESET command. This may be caused by transmission error. If this occurs frequently, Comm-Stor should be reconfigured.

r. Starting command character (.) received through modem port. Enter RESET command.

s. Transmission error caused by unknown ex-

ternal source. Enter RESET command and attempt operation again.

t. Comm-Stor is in ECHO MODE. Exit this mode. (.EX).

u. Comm-Stor is in MONITOR MODE. Exit this mode (.MX).

v. † Remote device will not accept batch transmission.

w. † Bad phone line connection to remote computer. Redial remote location.

x. Binary files are displayed at terminal by operator's request. Binary files are denoted in the Directory with a "B". ***These files should not be displayed at the terminal.***

y. Comm-Stor unit is incorrectly configured regarding parity. Reconfigure the system using the CONFIGURATION diskette.

z. One of the following occurred while BUSY light was on:

1.) RESET was entered
2.) RESTART button was pushed
3.) Drive door was opened
4.) Comm-Stor unit was powered-off

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APPENDIX A

COMMON ERROR MESSAGES

MESSAGE	DESCRIPTION	CORRECTION
NOT RDY	Operator attempted to use Comm-Stor when a diskette was either not in place or was inserted improperly.	Check to see if there is a diskette in place. If not, insert one; if so, re-insert the diskette to assure it is properly in place.
DISKETTE	The system was unable to find the proper location on the diskette where a file is or will be stored.	The probable cause of this error is a bad diskette. Try to locate the desired file again; if the error is repeated, insert a new User diskette. If a dual drive system is in use, data may be recovered by first CANCELING the file containing the error; then, insert a blank user diskette into the lower drive; finally, enter: .C *[CR] to transfer data from the bad diskette.
ERROR—BAD READ	The complete file, or part of the requested file, could not be read without errors.	Try the command again. If the error message is repeated, rewrite the file on the diskette. If the error still occurs, substitute a new User diskette.
PROTECT	An attempt was made to write on a diskette that is Write Protected.	Enter the command Write Enable (.WE).
WRONG DK	The diskette being used by Comm-Stor is not a User diskette, or it is a bad User diskette.	Insert a valid User diskette or a new User diskette.
PREP SYS	The baud switch was not set to KYBD position when a Baud command was input. or A form was not properly loaded by the operator prior to using Forms Operations.	
FULL DSK	The Directory is full and there is no more storage space available on the diskette.	Either a file must be canceled from the full diskette, or a new diskette must be inserted.

MESSAGE	DESCRIPTION	CORRECTION
NO FIND	The requested file does not exist in the Directory. or A search string was not found in Forms Mode.	Check to see that the file name requested agrees exactly with the Directory entry and has been typed in exactly the same manner.
ILLEGAL	An illegal operation has been attempted. Examples: Edit (.ED) a binary file, or When in the Forms Mode, attempting to Enter a non-forms file, or Requesting an Edit or Forms operation without the option installed, or Don't Care or Exclusion character used while in Alpha Mode. or An Enter Automatic command issued without an Auto-Name (.LI command) loaded, or A variable length file command (.DS S, .SS, or .RE) with no file.	
BAD SIZE	In Edit Mode: An attempt to Save a file with no data. In Forms Mode: The number of entries in the data file exceeds the number of variable fields in the form. The wrong form was probaby loaded into the forms buffer, or The form is too big for the buffer.	
USR TABL	The system detected an improper command from the User Command Table.	The User Command Table must be corrected using the Configuration diskette.
MODEM	An improper condition has been detected at the modem interface. One of the following conditions exist:	

MESSAGE	DESCRIPTION	CORRECTION
	Clear To Send was not asserted within 400 msec after Request To Send was asserted, or Data Set Ready was not asserted when attempting to perform a Send, Send Directory or Send Status command.	
NO ROOM	An edited file is now longer than the acceptable file storage length on the diskette, or, an improper User diskette is being used. or An attempt was made to exceed the capacity of the scratch pad with an Edit, Insert, Replace or Append command. or When merging a file in the Forms Mode, the forms data field is too small for the forms data. or An attempt was made to Edit a file on a diskette which was not configured to have a scratch pad. or A Search/Replace operation results in a line length exceeding the configured value.	Reduce file size to the maximum file length. Check to see that the proper User diskette is being used.
OVERRUN	The operator has typed in a file which exceeds the maximum file length, ignoring the warning bell. or The modem or terminal buffer has been filled beyond its configured capacity. or An illegal buffer configuration exists.	Re-enter the file.
SYSTEM	Indicates that the system has detected an equipment problem, or a diskette with a bad Directory. If the error occurs when another diskette is used, the operator should note the conditions which created the error and contact maintenance personnel.	

MESSAGE	DESCRIPTION	CORRECTION
?	An improper command has been entered. Example: .CM was entered instead of .CN. A character was entered at the terminal and sent to the modem port when Data Set Ready was not present. This error usually occurs when the operator forgets to enter a period to symbolize the start of a command. Note: The bell signal is also used to indicate the completion of an Enter or Enter Automatic operation.	Check the display to identify the error, and then enter the command properly. Refer to command guide tables (Appendix B).
BELL	Forgot to place period at start of command. The terminal bell is also used to signal ***non-error*** activities, such as: 1. Signify entry of ETX character. 2. End of Line or End of File warning. 3. To signal need for operator response, i.e., SURE?.	Check display to identify possible command error. If none exists, command Comm-Stor to display the file just entered to confirm that the file is listed in the Directory.

APPENDIX B

COMMANDS, CONTROL CODES AND SPECIAL CHARACTERS

TABLE

STANDARD SYSTEM OPERATIONS

OPERATION	STANDARD COMMAND NAME	USER ASSIGNED NAME
Alpha Mode	.AM	_____
Bit Rate Modem	.BM	_____
Bit Rate Printer	.BP	_____
Bit Rate Terminal	.BT	_____
Cancel (File)	.CN	_____
Copy	.C	_____
Display Directory	.DD	_____
Display (File)	.D	_____
Display Status	.DS	_____
Enter Automatic	.EA	_____
Enter (File)	.E	_____
Echo Mode	.EM	_____
Echo Mode Exit	.EX	_____
Included Mode	.IM	_____
Included Mode Exit	.IX	_____
Load Extension	.LE	_____
Load Initial	.LI	_____
Monitor Mode	.MM	_____
Monitor Mode Exit	.MX	_____
Print Directory	.PD	_____
Print (File)	.P	_____
Receive Automatic	.RA	_____
Receive (File)	.R	_____
Rename (File)	.RE	_____
Restore (Diskette)	.RE	_____
Send Directory	.SD	_____
Send (File)	.S	_____
Send Status	.SS	_____
Sequential Mode	.SM	_____
Standby Mode	.SB	_____
Write Enable	.WE	_____
Write Protect	.WP	_____

APPENDIX B

COMMAND CODES

COMPOSE/CORRECT

Write Enable	.WE[CR]
ENTER	.E File Name[CR]
Write Protect	.WP[CR]
Character Cancel	RUB OUT or Backspace
Line Cancel	CTRL/X
File Cancel	.CN File Name[CR]
RENAME	.RE Old Name/New Name[CR]

DISPLAY

Display Single File	.D File Name[CR]
SEQUENTIAL MODE (See Notes)	.SM[CR]
Display Directory (All)	.DD *[CR]
Display Directory (*/Jones)	.DD */JONES[CR]
Display Directory (Jones/*)	.DD JONES/*[CR]
Display Directory (Jones/Smith)	.DD JONES/SMITH[CR]
ALPHABETICAL MODE (See Notes)	.AM[CR]
Display Directory (All)	.DD *[CR]
Display Directory (*/D)	.DD */D[CR]
Display Directory (D/*)	.DD D/*[CR]
Display Directory (D/F)	.DD D/F[CR]

Note 1: The asterisk is used to represent the words "from the beginning to", OR "from a certain point to the end".

Note 2: The slash mark (/) is used to separate range limits, and may be interpreted to mean "THRU".

PRE-EDIT

CLEAR (Clear the Editor)	;Q[CR]
EDIT (Prepare to Edit)	.ED File Name[CR]
LIST (All of File)	;L*[CR]
LIST (Single Line of File)	;L Line #[CR]
LIST (Group of File Lines)	;L Line #, Line #[CR]
LIST & NUMBER (All of File)	;N*[CR]
LIST & NUMBER (Specific Line)	;N Line #[CR]
LIST & NUMBER (Group of Lines)	;N Line #, Line #[CR]

EDIT/MODIFY

DELETE (Specific Line)	;D Line # [CR]
DELETE (Group of Lines)	;D Line #, Line # [CR]
INSERT (Single Line)	;I Line # [CR] Enter Line [CR] ETX (1)
INSERT (Group of Lines)	;I Line # [CR] . Ener Line[CR] Enter Lien[CR] ETX (See Note)
ADD (Single Line)	;A[CR] Enter Line[CR] ETX (See Note)
ADD (Group of Lines)	;A[CR] Enter Line[CR] Enter Line[CR] ETX (See Note)
SAVE (Edited File)	.SV File Name[CR]
REPLACE (Single Line)	;R Line#[CR] Enter line[CR] [ETX] (See Note)
REPLACE (Group of Lines)	;R Line#, Line#[CR] Enter Line[CR] Ener Line[CR] ETX (See Note)

HIGHEST USED LINE NUMBER	;=(Comm-Stor displays line #)
SEARCH (Search without replacement)	;S/character string/
SEARCH (Display ***every line*** in file containing character string)	;S/character string/*
SEARCH (and replace ***first*** occurrence in file)	;S/old string.new string/*
SEARCH (and replace ***all*** occurrences in file)	;S/old string/new string/*
SEARCH (and replace ***first*** occurrence in ***each line***)	;S/old string/new string/+

Note: Terminate final line of text with an End of Line Character, usually CTRL/C.

FORMS OPERATIONS

FORMS COMPLETE (file name)	.FC file name[CR]
FORMS VARIABLE (file name)	.FV file name[CR]
FORMS EXIT	.FX[CR]
FILL IN FROM DRIVE 1	CTRL/O
FILL IN FROM DRIVE 2	CTRL/N

FILE NAMES—LOAD EXTENSION

LOAD ENTENSION (extension)	.LE extension[CR]
LINE CANCEL	CTRL/Z
CHARACTER STRING SEARCH	CTRL/Y characters[CR]
END OF TEXT	CTRL/C
DISPLAY STATUS	.DS[CR]
PAUSE	CTRL/S
RESUME	CTRL/Q

APPENDIX C

Comm-Stor PRACTICE EXERCISES

The following Practice Exercises have been designed for use with this manual and the User Practice Diskette.

The exercises should not be attempted until the operator is familiar with the contents of this manual, power to Comm-Stor has been turned on, and the User Practice Diskette is properly in place.

These operating procedures, including Start-Up, and proper insertion of the Diskette are described in Chapter 2 of this Manual.

Although the exercises may be performed in any order, the preferred sequence is:

Exercise A: Display

Exercise B: Compose/Correct (Non-Forms Files)

Exercise C: Edit

Exercise D: Forms Mode

In addition to the specified command instructions that are presented with each exercise, the new operator is referred to the appropriate Command Reference Chart that is contained in Appendix B.

A. PRACTICE EXERCISES (DISPLAY)

Insert the Diskette

Exercise I

To DISPLAY the Directory on the User Practice Diskette in SEQUENTIAL order.

1. To display the Directory in sequential order, Comm-Stor must be in the SEQUENTIAL MODE. Place Comm-Stor in the Sequential Mode by entering the command:

.SM[CR]

2. Then use the DISPLAY DIRECTORY command to display all of the files stored in the Directory:

.DD *[CR]

The complete Directory will now be displayed in sequential order. Note the order of the file names:

UNUSED ENTRIES = 21

CONNELL, DONALD	178	
HOLMES, HENRY	1	
PARKER, JAMES	1	
THOMAS, LOWELL	1	
WATSON, WILLIAM	1	
ABLE, ADOLF	1	
AIR RESERVATIONS	314	
YOUNG, ALBERT	1	
SUB-SYSTEM, OPTICAL	1	
EVANS, RICHARD	1	
BROWN, JOHN	1	
SUB-SYSTEM, ELEC	1	
MAIL LIST	185	
ACME	67	F
NEW RESERVATIONS	285	

Exercise II

To DISPLAY the Directory on the User Diskette in ALPHABETICAL order.

1. To display the Directory in Alphabetical order, Comm-Stor must be in the ALPHABETICAL MODE. Place Comm-Stor in the ALPHABETICAL MODE by entering the command:

.AM[CR]

2. Next, enter the DISPLAY DIRECTORY command to display all of the Directory file names:

.DD *[CR]

Note that the file names are displayed in Alphabetical order:

UNUSED ENTRIES = 21

ABLE, ADOLF	1	
ACME	67	F
AIR RESERVATIONS	314	
BROWN, JOHN	1	
CONNELL, DONALD	178	
EVANS, RICHARD	1	

HOLMES, HENRY	1
MAIL LIST	185
NEW RESERVATIONS	285
PARKER, JAMES	1
SUB-SYSTEM, ELEC	1
SUB-SYSTEM, OPTICAL	1
THOMAS, LOWELL	1
WATSON, WILLIAM	1
YOUNG, ALBERT	1

Exercise III

To display the file associated with a certain file name, CONNELL, DONALD.

1. Enter the following file name exactly as it is shown:

.D CONNEL, DONALD[CR]

The Error Message, ERR NO FIND should now be displayed. That is because the name of the file was misspelled, and Comm-Stor could not find a file by that name in the Directory.

2. Try again, this time enter the name correctly:

.D CONNELL, DONALD[CR]

Remember, the single letter D is used to display single file names.

Now, the file associated with the file name CONNELL, DONALD will be displayed, as shown below:

.D CONNELL, DONALD

This is the file associated with the file name CONNELL, DONALD. Remember, if a file name is not entered exactly, Comm-Stor will display the error message ERR—NO FIND.

Exercise IV

To DISPLAY the GROUP of file names from the beginning of the Directory up to and including all file names beginning with the letter H. Remember, Comm-Stor is in the Alphabetical Mode.

1. Enter:

.DD */I[CR]

The I is used in the command to tell Comm-Stor to display all of the file names up to and including any file named "I".

The following display will appear.

UNUSED ENTRIES = 21

ABLE, ADOLF	1	
ACME	67	F
AIR RESERVATIONS	314	
BROWN, JOHN	1	
CONNELL, DONALD	178	
EVANS, RICHARD	1	
HOLMES, HENRY	1	

Since this is a DISPLAY DIRECTORY command, it requires a DD entry. Note also that the name HOLMES, HENRY is included in the listing. This is because Comm-Stor has alphabetized all Directory listings up to and including the file named "I". Since there is no name "I", the list ends with the name HOLMES.

Exercise V

To perform the same command as Exercise IV, but with the range limited to file names beginning with the letter H.

1. Enter:

.DD */H[CR]

The display should now be as shown below:

UNUSED ENTRIES = 21

ABLE, ADOLF	1
ACME	67
AIR RESERVATIONS	314
BROWN, JOHN	1
CONNELL, DONALD	178
EVANS, RICHARD	1

Note that the name HOLMES, HENRY no longer appears in the listing. It is important to understand how the use of letters affects display ranges.

Exercise VI

To DISPLAY the group of file names, in SEQUENTIAL ORDER, from the beginning of the

Directory, up to and including the file name WATSON, WILLIAM.

1. Since Comm-Stor is in the Alphabetical Mode, it is necessary to command it to return to the Sequential Mode. The command for this is:

.SM[CR]

2. The proper display command is:

.DD */WATSON, WILLIAM[CR]

The display should now be:

UNUSED ENTRIES = 21

CONNELL, DONALD	178
HOLMES, HENRY	1
PARKER, JAMES	1
THOMAS, LOWELL	1
WATSON, WILLIAM	1

Note that the file names are no longer in alphabetical order, and that the file name WATSON, WILLIAM is included in the listing.

Exercise VII

To DISPLAY, in sequence, the range of file names from HOLMES, HENRY through WATSON, WILLIAM.

1. Enter:

.DD HOLMES, HENRY/WATSON,WILLIAM[CR]

The following list should be displayed:

UNUSED ENTRIES = 21

HOLMES, HENRY	1
PARKER, JAMES	1
THOMAS, LOWELL	1
WATSON, WILLIAM	1

Note that in this Display Directory command, the names which set the limits of the range ***are included*** in the display.

Exercise VIII

As a final DISPLAY exercise, display in sequential order all file names from YOUNG, ALBERT through the end of the Directory.

1. The Display Directory command should be:

.DD YOUNG, ALBERT/*[CR]

The following list will be displayed:

UNUSED ENTRIES = 21

YOUNG, ALBERT	1	
SUB-SYSTEM, OPTICAL	1	
EVANS, RICHARD	1	
BROWN, JOHN	1	
SUB-SYSTEM, ELEC	1	
MAIL LIST	185	
ACME	67	F
NEW RESERVATIONS	316	

This concludes the practice DISPLAY exercises.

B. PRACTICE EXERCISES (COMPOSE/CORRECT) (NON-FORMS FILES)

The following exercises provide practice in the Compose and Correct functions of Comm-Stor.

Exercise I

To ENTER (Compose) a new file, with the name SMITH, SAM.

1. Use the ENTER command:

.E SMITH, SAM[CR]

Comm-Stor should now display the error message ERR—PROTECT. This indicates that Comm-Stor is in the WRITE PROTECT (WP) mode, and therefore, no new data or information may be placed in the diskette.

Remember, before an ENTER command, Comm-Stor must be in the WRITE ENABLE mode (WE).

2. Do this now, by entering:

.WE[CR]

3. Now enter:

.E SMITH, SAM[CR]

Comm-Stor is now ready to accept the file text. Type in the following data remembering to conclude each line with an EOL[CR] character, as shown below:

THIS IS THE TEXT OF A [CR]
PRACTICE FILE THAT HAS BEEN [CR]
ASSIGNED THE NAME SMITH, SAM [CR]
[ETX]

For most terminals, the ETX character will be the keyboard command CTRL/C (strike the C key while holding down the CTRL/C key). When properly entered, the terminal bell will ring, indicating that Comm-Stor has accepted and stored the new file.

Exercise II

To confirm that the new file has been stored on the diskette, request Comm-Stor to display SMITH, SAM:

1. Enter:

.D SMITH, SAM[CR]

The following file will appear:

.D SMITH, SAM
THIS IS THE TEXT OF A
PRACTICE FILE THAT HAS BEEN
ASSIGNED THE NAME SMITH, SAM.

Exercise III

To CANCEL the file SMITH, SAM that was just composed.

Complete files can be cancelled by the use of the CANCEL command (CN).

1. Cancel SMITH, SAM by entering:

.CN SMITH, SAM[CR]

Comm-Stor will respond by displaying:

SMITH, SAM

This confirms to the operator that the file has been cancelled. To prove this, request Comm-Stor to display the file SMITH, SAM:

.D SMITH, SAM[CR]

Comm-Stor will respond with the Error Message ERR-NO FIND, indicating that the file name cannot be located in the Directory.

Exercise IV

To correct a typing error by cancelling a complete file line.

1. Recompose only the first two lines of the file names SMITH, SAM. If necessary, refer back to Exercise II, and enter:

.E SMITH, SAM[CR]
THIS IS THE TEXT OF A [CR]
PRACTICE FILE THAT HAS BEEN [CR]

2. Now, complete the 3rd line of the file and ***purposely misspell*** the name SMITH.

3. ***NOTE:*** (DO NOT type the EOL character):

ASSIGNED THE NAME SMITH, SAM

4. One technique used to correct this kind of error is to CANCEL the entire line in which the error occurs.

   Do this now by entering:

CTRL/X

which is the LINE CANCEL command. It is made by striking the letter key X, while holding the CTRL key down.

Comm-Stor will now skip to a new clean line, leaving the old line displayed.

5. Now retype the line correctly:

ASSIGNED THE NAME SMITH, SAM[CR]
[ETX]

6. To confirm that the error has been corrected, and that the new line has been inserted, request Comm-Stor to display the file by entering:

.D SMITH, SAM[CR]

The corrected file will now be displayed.

7. Cancel the file SMITH, SAM by entering:

.CN SMITH, SAM[CR]

SMITH, SAM

Exercise V

To correct a typing error by using the Character Delete function key.

Again, compose the complete error message described in Exercise IV with the name SMITH misspelled. DO NOT strike the ETX character at the end of the third line of text. The file should appear as:

.E SMITH, SAM
THIS IS THE TEXT OF A
PRACTICE FILE THAT HAS BEEN
ASSIGNED THE NAME SNITH, SAM

1. To correct the typing error (the letter N in the name SMITH), using the Character Delete function key, strike the Character Delete key 9 times, enough to ***backspace*** to the point in the line at which the error occurs. The letter N is the ***9th*** character from the end of the line. Do not forget to count the spaces.

2. Now retype the line ***from the point of the error*** to the end, by entering:

MITH, SAM[CR]
[ETX]

3. The error message has now been corrected. To prove this, display the file named SMITH, SAM by entering:

.D SMITH, SAM[CR]

The corrected file will now be displayed.

Exercise VI

To change the name of an existing file using the RENAME command.

1. Change the name of the file SMITH, SAM to JONES, MARY.
Enter:

.RE SMITH, SAM/JONES, MARY[CR]

2. Attempt to display the original file, SMITH, SAM by entering:

.D SMITH, SAM[CR]

Comm-Stor will respond with the error message ERR—NO FIND, since there is no longer a file by the name SMITH, SAM stored on the diskette.

3. Now, confirm that the file has been stored in the Directory under the new name, JONES, MARY.
Enter:

.D JONES, MARY[CR]

Comm-Stor will display the original file, but with a revised file name.

4. Conclude this series of exercises by cancelling the file names JONES, MARY.
Enter:

.CN JONES, MARY[CR]

This completes the Practice Exercises for Composing and Correcting Comm-Stor files.

C. PRACTICE EXERCISES (PRE-EDIT/EDITING)

Exercise I

To prepare the Directory file named AIR RESERVATIONS for editing.

1. First, CLEAR the editing area by entering the CLEAR command:

;Q[CR]

2. Transfer the file AIR RESERVATIONS into the editor, by entering:

.ED AIR RESERVATIONS[CR]

Do not enter any further command until "prompted", that is, until the carriage on the display returns to the left margin.

Note that the BUSY LIGHT will remain illuminated while the file is being transferred. ***Do not*** enter any new commands while the BUSY LIGHT is lit.

Exercise II

To LIST the lines of the file, AIR RESERVATIONS.

1. Enter the LIST command:

;L[CR]

Note that, in the Editing commands which follow, all commands are preceded by a (;) rather than a (.). This allows Comm-Stor to identify a command as an editing command.

The following file will be displayed:

```
:L
SMITH, ALICE
AA FLT 364
NYC TO LAX
3/7/77
DEPART 0830 ARRIVE 1130

JONES, PETER
UA FLT 126
ROC TO PBG
4/1/77
DEPART 1030 ARRIVE 1125

WILLIAMS, MARY
AA FLT 103
NYC TO CHI
2/10/77
DEPART 0730 ARRIVE 0830

FORD, CHIP
UA FLT 317
DEN TO CHI
4/4/77
DEPART 0830 arrive 1230
```

Most EDITING operations require reference to a specific file line number. This may be obtained by requesting Comm-Stor to ***both*** LIST AND NUMBER the lines of the file.

Exercise III

To LIST AND NUMBER the lines of the file named AIR RESERVATIONS.

1. Command Comm-Stor to LIST AND NUMBER AIR RESERVATONS, enter:

;N[CR]

The display should now appear as:

```
;N

1
2 SMITH, ALICE
3 AA FLT 364
4 NYC TO LAX
5 3/7/77
6 DEPART 1830 ARRIVE 1130
7
8 JONES, PETER
9 UA FLT 126
10 ROC TO PBG
11 4/1/77
12 DEPART 1030 ARRIVE 1125
13
14 WILLIAMS, MARY
15 AA FLT 103
16 NYC TO CHI
17 2/10/77
18 DEPART 0730 ARRIVE 0830
19
20 FORD, CHIP
21 UA FLT 317
22 DEN TO CHI
23 4/4/77
24 DEPART 0830 ARRIVE 1230
```

Exercise IV

Cancel (DELETE) airline reservations for Peter Jones, by DELETING the group of lines 8 thru 13.

Note that in this command lines 8 thru 13 are to be DELETED, and that this includes line 13, which is a blank line. If only lines 8 thru 12 were deleted, the actual file lines for Peter Jones, the Edited file, would contain *two* spaces between reservation entries rather than one. So in order to maintain the same file format, it is necessary to DELETE ***not only the actual part of the file, but one blank line also.***

1. Enter:

;D8,13[CR]

Now instruct Comm-Stor to display the EDITED file.

2. Enter:

;N[CR]

The following display should appear:

```
;N
1
2 SMITH, ALICE
3 AA FLT 364
4 NYC TO LAX
5 3/7/77
6 DEPART 0830 ARRIVE 1130
7
8 WILLIAMS, MARY
9 AA FLT 103
10 NYC TO CHI
11 2/10/77
12 DEPART 0730 ARRIVE 0830
13
14 FORD, CHIP
15 UA FLT 317
16 DEN TO CHI
17 4/4/77
18 DEPART 0830 ARRIVE 1230
```

Note that Comm-Stor has automatically remembered all lines of the file.

Exercise V

To correct an error in reservation information, change the FLT number for MARY WILLIAMS FROM FLT 103 to FLT 130.

This correction will be done in two steps. First, the DELETE command will be used to delete the line containing the incorrect FLT information from the file, and then, the INSERT command will be used to insert a new file line with the proper FLT information.

1. DELETE the line containing the incorrect flight number. Note that this error occurs in line #9. Therefore, the DELETE command should be:

:D9[CR]

Line #9 has now been deleted. Next, INSERT a new line, containing the proper flight information. It should have the same line number.

2. Enter:

```
;I9[CR]
AA FLT 130[CR]
[ETX]
```

Remember, when using the INSERT command, it is necessary to terminate the command with the EOL character, and any text material should be terminated with the ETX character, CTRL/C.

To confirm that the change has been incorporated in the file, request Comm-Stor to display the EDITED file.

3. Enter:

;L[CR]

The following file should be displayed:

```
;L

SMITH, ALICE
AA FLT 364
NYC TO LAX
3/7/77
DEPART 0830 ARRIVE 1130

WILLIAMS, MARY
AA FLT 130
NYC TO CHI
2/10/77
DEPART 0730 ARRIVE 0830

FORD, CHIP
US FLT 317
DEN TO CHI
4/4/77
DEPART 0830 ARRIVE 1230
```

Exercise VI

To ADD a new reservation to the file named AIR RESERVATIONS. The new reservation is:

```
WILSON, WARREN
EA FLT 201
NYC TO ORL
3/21/77
DEPART 0800 ARRIVE 1115
```

This EDITING will be done using the ADD command (;A).

Just as it was important to remember to Delete a blank line in order to keep the same file format, it is necessary to ADD a blank line.

1. To ADD the new reservation using the ADD (;A) command enter:

;A[CR]
[CR]
WILSON, WARREN[CR]
EA FLT 201[CR]
NYC TO ORL[CR]
3/2/77[CR]
DEPART 0800 ARRIVE 1115[CR]
[ETX]

Exercise VII

To confirm that the new reservation has been added.

Request Comm-Stor to LIST (;L) the file.

1. Enter:

;L[CR]

The following file should appear:

;L

SMITH, ALICE
AA FLT 364
NYC TO LAX
3/7/77
DEPART 0830 ARRIVE 1130

WILLIAMS, MARY
AA FLT 130
NYC TO CHI
2/10/77
DEPART 0730 ARRIVE 1830

FORD, CHIP
UA FLT 317
DEN TO CHI
4/4/77
DEPART 0830 ARRIVE 1230

WILSON, WARREN
EA FLT 201
NYC TO ORL
3/21/77
DEPART 0800 ARRIVE 1115

Exercise VIII

To return an edited file to storage in the Directory using the SAVE (SV) command.

When editing a file is complete, the file may be returned to the Directory.

1. Enter:

.SV NEW RESERVATIONS[CR]

Since the edited file being returned to the Directory has the same name as an existing file, Comm-Stor will respond:

SURE?

If the edited file is complete and accurate, the operator may store the file by typing:

Y

Comm-Stor will transfer the file back to the Directory. If the file required additional editing, the response N would have allowed additional editing work.

Exercise IX

Complete the Practice Exercises in Editing by confirming that the edited file is listed in the Directory.

1. Enter a Display Directory command.

.DD *[CR]

The file name NEW RESERVATIONS should be listed with the other Directory names.

D. PRACTICE EXERCISES (STANDARD FORMS OPTION)

Exercise I

To use the DISPLAY DIRECTORY (DD) command to locate FORMS data.

1. Enter the DISPLAY DIRECTORY command to display the contents of the Directory:

.DD *[CR]

Comm-Stor will respond by listing the names of files stored in the Directory. Note that the display shows a listing named ACME, with the letter F to the right, as shown below:

ACME 67 F

The F indicates that the file named ACME is variable data ***associated*** with a certain form.

Exercise II

To use commands associated with the FORMS Mode.

1. First command Comm-Stor to enter the FORMS COMPLETE (FC) mode using an existing form, with the command:

.FC MAIL LIST[CR]

2. Then, request Comm-Stor to DISPLAY the file named ACME:

.D ACME[CR]

Comm-Stor will respond by displaying the complete FORM, and the VARIABLE FIELD DATA associated with it, as shown below:

```
.FC MAIL LIST
.D ACME
NAME: [PETE SMITH   ]
TITLE: [MANAGER   ]
COMPANY: [ACME ELECTRIC   ]
STREET: [MAIN STREET   ]
TOWN: [CENTER CITY   ]
STATE: [MICHIGAN   ]
```

Exercise III

To place VARIABLE DATA in an existing form that is named MAIL LIST.

1. First, prepare the form to accept variable data by entering:

.FC MAIL LIST[CR]

2. Then, assign a name (WILLIAMS) to the file that is to be stored in the blank form. Enter:

.E WILLIAMS[CR]

Comm-Stor will respond by advancing to the first variable data field of the form. In this example it is titled NAME.

3. Enter the name,

BILL WILLIAMS[CR]

Remember, the EOL character (RETURN key or RETURN and LINE FEED) is used to advance to the next variable field. Now fill in the remaining forms information as it is requested.

```
Title:     PRESIDENT[CR]
Company: WILLIAMS MANUFACTURING[CR]
Street:    MAPLE AVENUE[CR]
Town:      CLEVELAND[CR]
State:     OHIO[CR]
```

4. After the State name (OHIO) has been entered, strike the EOL[CR] character. Comm-Stor will automatically store the new file. NO ETX command is required when entering forms data.

5. The completed file can be displayed by entering:

.D WILLIAMS[CR]

The file will be displayed as shown below:

```
.D WILLIAMS
NAME: [BILL WILLIAMS   ]
TITLE: [PRESIDENT   ]
COMPANY: [WILLIAMS MANUFACTURING]
STREET: [MAPLE AVENUE   ]
TOWN: [CLEVELAND   ]
STATE: [OHIO   ]
```

Exercise IV

To perform EDITING on VARIABLE FORMS data, by using the LINE RE-ENTER, (CTRL/Z), command.

1. First, it is necessary to create an appropriate message error situation. Do this now by re-

entering the file named WILLIAMS, using the ENTER command:

.E WILLIAMS[CR]

Since this is an existing file name, Comm-Stor will respond with a —SURE? as shown below:

.E WILLIAMS—SURE?

2. Strike the Y key for YES, and Comm-Stor will automatically advance to the first form heading, NAME:

.E WILLIAMS—SURE? Y
NAME: [

3. Now, strike the EOL[CR] character three times. The following file will be displayed; watch the display while entering the EOL character:

.E WILLIAMS—SURE? Y
NAME: [BILL WILLIAMS]
TITLE: [PRESIDENT]
COMPANY: [WILLIAMS MANUFACTURING]
STREET: [

4. Next, ***purposely*** create an error, by entering the street name MAPLE AVENUE, . . . but, ***Do not*** strike the EOL character. The display should appear as:

.E WILLIAMS—SURE? Y
NAME: [BILL WILLIAMS]
TITLE: [PRESIDENT]
COMPANY: WILLIAMS MANUFACTURING]
STREET: [MAPLE AVENUE]

5. CORRECT the error (the street name is to be changed to PINE STREET) by entering the LINE-RE-ENTER command CTRL/Z. Comm-Stor will automatically advance to the heading STREET, as shown below:

STREET: [MAPLE STREET]
STREET: [

6. Now, enter the correct street name, PINE STREET.

7. Since the remaining variable data is correct, use the EOL[CR] character to advance to the end of the form. Comm-Stor will automatically store the corrected file.

8. To confirm that the proper file has been stored, request Comm-Stor to DISPLAY the file that was just edited by entering:

.D WILLIAMS[CR]

Comm-Stor will display the file with the street name changed.

Exercise V

To perform EDITING on VARIABLE DATA using the CHARACTER SEARCH technique.

In this exercise, the contents of the NAME heading will be changed from BILL WILLIAMS to ***HENRY*** WILLIAMS.

1. First, recreate the file, up to the STREET heading, by entering:

.E WILLIAMS[CR]

Comm-Stor will respond with —SURE?

2. Strike the Y key for YES, and then enter three EOL[CR] characters. Comm-Stor will advance to the form heading STREET, as shown:

.E WILLIAMS—SURE? Y
NAME: [BILL WILLIAMS]
TITLE: [PRESIDENT]
COMPANY: (WILLIAMS MANUFACTURING]
STREET: [

3. Now, return to the line in which the error is located. Since the error occurs in the NAME field, use the letters NAM for the character search. First enter a CTRL/Y command by holding down the CTRL key, then striking the Y key. Then enter the characters NAM followed by an EOL[CR] command as shown below:

CTRL/Y NAM[CR]

The characters appear as shown below:

STREET: [NAM[CR]
NAME: [

4. Now, enter the correct name, HENRY WILLIAMS. Use the EOL[CR] character to advance to the end of the form. Comm-Stor will automatically record the change and store the new file.

5. To confirm that the error has been corrected, request Comm-Stor to display the complete file by entering:

.D WILLIAMS[CR]

The file will be displayed with the name HENRY WILLIAMS.

Exercise VI

To perform EDITING on VARIABLE DATA using the ENTER command.

In this exercise, the company name is to be changed from WILLIAMS MANUFACTURING to WILLIAMS ELECTRIC.

1. First, use the ENTER command, followed by the name WILLIAMS:

.E WILLIAMS[CR]

2. Comm-Stor will respond, —SURE? as before. Strike the Y key for YES, and Comm-Stor will automatically advance to the file heading NAME.

```
.E WILLIAMS—SURE?  Y
NAME: [
```

3. Since there are no corrections in this field, advance to the next field by striking the EOL[CR] character. There is no need to correct TITLE data, so again strike the EOL character and advance to the heading COMPANY.

The display should be:

```
.E WILLIAMS—SURE?  Y
NAME:  [HENRY WILLIAMS   ]
TITLE:  [PRESIDENT   ]
COMPANY:  [
```

4. Now, enter the proper company name, WILLIAMS ELECTRIC, and then strike the EOL character [CR] to advance to the end of the form.

Comm-Stor will automatically store the corrected file.

5. To confirm that the correction has been made, request Comm-Stor to display the file WILLIAMS, by entering:

.D WILLIAMS[CR]

Check the COMPANY field. The name should be WILLIAMS ELECTRIC.

6. Now, cancel the file WILLIAMS by entering:

.CN WILLIAMS[CR]

Exercise VII

To display only VARIABLE DATA by using the FORMS VARIABLE (FV) command.

1. To display ONLY variable data, Comm-Stor must be placed in the FORMS VARIABLE mode. Do this now by entering:

.FV[CR]

There will be no response by Comm-Stor, but in future commands, requests for display of forms files will show only the variable field data.

2. Display the VARIABLE DATA associated with the file ACME by entering:

.D ACME[CR]

Comm-Stor will respond by displaying:

```
.D ACME
      PETE SMITH            MANAGER
        ACME ELECTRIC
      MAIN STREET
   CENTER CITY      MICHIGAN
```

Now, leave the FORMS VARIABLE mode by entering:

.FX[CR]

Exercise VIII

To CREATE a new blank form named ORDER FORM.

1. Since a blank form is basically a file, the ENTER command is used, followed by the form name. Enter this now:

.E ORDER FORM[CR]

2. The structure of the new form is shown below. Headings are shown, and the length of each variable data field is indicated. Remember, also that the ***First*** character of the ***First*** variable field is the DEFAULT character. In this exercise it will be a SPACE. The letter "X" will be used as the "dummy" character. Use the space bar, and EOL[CR] character to advance from line to line. Do not worry if the number of characters in each variable field is not exactly as specified. For this exercise, it is more important to learn the ***process*** of creating the new form.

   Enter the forms data exactly as shown below:

DATE ORDERED: [__XX-XX-XX] [CR]
DATE SHIPPED: [XX-XX-XX] [CR]
CUSTOMER: [XXXXX 30 charactersXXX] [CR]
STREET: [XXXXX 20 charactersXXXXX] [CR]
TOWN: [XXXXX 20 characters XXXXX] [CR]
STATE: [XX] [CR]
MODEL: [XXX] [CR] OPTIONS: [XXXX] [CR]
QUANTITY: [XXXX] [CR]
SALESPERSON: [XXX 20 charactersXXX] [CR]
[ETX]

   After the last closed bracket has been entered on the last variable field, SALESPERSON, strike the ETX character, (CTRL/C), and the new form will be stored on the diskette.

   Display the completed form using the DISPLAY command:

.D ORDER FORM[CR]

   The complete form, containing both headings and variable data fields, will be displayed.

Exercise IX

To complete the blank form named ORDER FORM, with an assigned name that contains an EXTENSION.

1. Enter the FORMS COMPLETE mode by entering the command symbol (FC), followed by the form name:

.FC ORDER FORM[CR]

   The form has now been prepared to accept variable data.

2. The EXTENSION of a file name normally contains information designated by the operator that will be helpful in sorting or searching through files.

   In this exercise, the Extension will be the ORDER DATE. The extension format will follow that used on the ORDER FORM, 10-10-77.

   To place an Extension on subsequent file names, enter the LOAD EXTENSION command:

.LE 10-07-77[CR]

3. Next, the file name itself will be assigned. A file number has been selected, 0001. Use the ENTER (E) command to assign the file name:

.E 0001[CR]

4. Comm-Stor will advance to the first field, DATE ORDERED. Using the proper format, enter the data as shown below:

DATE ORDERED: [10-07-77]

5. Notice that since the number of characters in the date exactly equals the length of the variable field, Comm-Stor automatically advanced to the beginning of the next variable field.

   Now, complete the remainder of the form, by providing Comm-Stor with the information shown below, as it is requested.

DATE SHIPPED: [10-15-77]

CUSTOMER: [ACME ELECTRONICS]

STREET: [OAK STREET]

TOWN: [WOODSVILLE]

STATE: [NJ]

MODEL: [4330]

OPTIONS: [1763]

QUANTITY: [0002]

SALESPERSON: [PAT SMITH]

Since the last entry does not completely fill the final variable field, strike the EOL character to advance to the end of the form.

Comm-Stor will automatically store the new forms file, and signal the operator by ringing the terminal bell.

Exercise X

To EDIT existing forms data (File 0001), and transfer the revised file back to the diskette with a *new* name (File 0002).

1. First, CLEAR the editing area by entering the CLEAR command:

:Q[CR]

2. Next, call-up the blank form, ORDER FORM, by entering:

.FC ORDER FORM[CR]

3. Finally, use the ENTER command to assign a new name to the modified file.
   Enter:

.E 0001/0002[CR]

Comm-Stor will respond by advancing to the first variable field, DATE ORDERED.

4. The revision to variable data will be the address of ACME ELECTRONICS. Use the EOL character to "tab" through the form until the variable field title, STREET, is reached.

Enter the ***revised*** Street address:

MAIN STREET

5. Strike the EOL character and advance to the form heading, TOWN. Enter:

CORNING

6. Again, use the EOL character and advance to the form heading STATE. Enter:

NY

Comm-Stor will advance to the next heading, MODEL. Since there are no additional changes to be made to forms data, use the EOL character to advance to the end of the form. Comm-Stor will automatically store the revised file on the diskette.

7. To confirm that the new file has been stored, request Comm-Stor to DISPLAY the original file 0001 by entering:

.D 0001 [CR]

Comm-Stor will display the original file.

8. Next, request Comm-Stor to DISPLAY the ***revised*** file by entering:

.D 0002[CR]

The file displayed will contain the new address information.

9. Leave the FORMS mode by entering the FORMS EXIT command.

.FX[CR]

Exercise XI

To DISPLAY the complete Directory, and confirm file name and extension information.

1. Enter the DISPLAY DIRECTORY command as shown below:

.DD *[CR]

Comm-Stor will display the listing of all file names stored on the diskette. Among them will be:

```
0001   10-07-77   82   F
0002   10-07-77   84   F
```

Remember, 0001 is the file name, 10-07-77 is extension information, and the F indicates the file is FORMS data.

Exercise XII

To illustrate how extension information can be used to locate specific Directory files.

1. Use the DISPLAY DIRECTORY command to locate only those files which have 10-07-77 as the extension. Enter the command:

.DD *+10-07-77[CR]

Comm-Stor will display only the files 0001 and 0002 since these are the only two files in the Directory which have this Extension.

2. Now, CANCEL both files 0001 and 0002 by entering:

.CN 0001[CR]
.CN 0002[CR]

3. Also CANCEL the file ORDER FORM by entering:

.CN ORDER FORM [CR]

4. Next, leave the LOAD EXTENSION Mode by entering the LOAD EXTENSION command without the argument:

.LE[CR]

5. Finally, place Comm-Stor in WRITE PROTECTED Mode by entering:

.WP[CR]

This completes the Exercises using the STANDARD FORMS option.

Remove the diskette from Comm-Stor and place it in the protective envelope. Then power down both Comm-Stor and the Terminal.

Thank you.

APPENDIX D

STATUS DISPLAY FORMAT
(For Both Send Status and Display Status)

1 Last System Error Code	2 Parity Error	3 Terminal Ready	4 Printer Ready	5 Drive 1 Ready	6 Drive 2 Ready	7 Write* Protect
8 Alpha Mode	9 Monitor Mode	10 Included Mode	11 Echo Mode	12 Standby Mode	13 Forms Mode	14 Forms Variable

15 Number of Files on Diskette*	16 Maximum Number of Files Per Diskette*	17 Maximum Number of Sectors Per File*# (1 sector = 128 characters)	18 Maximum Number of Characters per Line*
19 Number of Lines on Scratch pad	20 Number of Lines Per Page	21 Maximum Number of Characters in File Name*	22 Maximum Number of Characters in Extension*

23 Current Extension

24 Current Auto-Name

*These items are controlled by the particular User diskette in use. See "How to Configure... Comm-Stor II" for instruction in building User diskettes.

#This field will contain "+" characters if a variable length file type diskette is being used.

STATUS DISPLAY EXPLANATION

1. LAST SYSTEM ERROR CODE

Indicates the number of the last system error message if any system errors have occurred. If no errors have occurred, the response is "N" for None.

2. PARITY ERROR

A response of "Y" or Yes indicates that a parity error has occurred at either the modem or terminal port while data was being received by Comm-Stor. This condition can be cleared only by issuing a Reset command from either modem or terminal, or by depressing the RESTART button. A response of "N" for No indicates that no parity error has occurred since the last Reset command was issued. Note that Comm-Stor may be configured to consider a framing error to be the same as a parity error. Refer to "How to Configure... Comm-Stor II".

3. TERMINAL READY

A response of "Y" indicates that the terminal is on-line and ready to send/receive data. A response of "N" indicates that the terminal is not ready. Probable causes: terminal not switched on-line; terminal does not have a Data Terminal Ready signal (Refer to "How to Configure... Comm-Stor II"); incorrect cable from terminal to Comm-Stor; terminal power off.

4. PRINTER READY

Similar to TERMINAL READY above but applies to printer only.

5. DRIVE 1 READY

A response of "Y" indicates that a diskette is in place in Drive 1, the door is closed and the diskette is spinning at the proper speed. A response of "N" indicates that the above is not true. Probable causes: door is open and/or diskette not in place; unit is in Standby Mode (also indicated in status display); hardware malfunction.

6. DRIVE 2 READY

As above but applies to Drive 2.

7. WRITE PROTECT

The diskette ***whose status is being displayed*** (.DS or .DS2) is Write Protected. The user must unprotect the diskette before any operation which writes data on the disk can be performed. The .WE (Write Enable) command is used for this purpose. ***This does not reflect the individual file status.*** Therefore, each file must be individually Write Enabled (if it is Write Protected) in order to write data into it.

8. ALPHA MODE

A response of "Y" indicates that Comm-Stor is in the Alpha Mode. A response of "N" indicates that it is not in the Alpha Mode and therefore is in the Sequential Mode.

9. MONITOR MODE

A response of "Y" indicates that Comm-Stor is currently in the Monitor Mode. A response of "N" indicates that Comm-Stor is not currently in this mode (.MX).

10. INCLUDED MODE

A response of "Y" indicates that Comm-Stor is currently in the Included Mode. A response of "N" indicates that Comm-Stor is not currently in this mode (.IX).

11. ECHO MODE

A response of "Y" indicates that Comm-Stor is currently in the Echo Mode. A response of "N" indicates that Comm-Stor is not currently in this mode.

12. STANDBY MODE

A response of "Y" indicates that Comm-Stor is currently in the Standby Mode. A response of "N" indicates that Comm-Stor is not currently in this mode.

CAUTION: Diskettes must ***NEVER*** be inserted in the disk while the unit is in Standby Mode since this may cause permanent damage to the diskette!

13. FORMS MODE

A response of "Y" indicates that Comm-Stor is currently operating in either the Forms Variable or Forms Complete Mode. A response of "N" indicates that the above is not the case (.FX).

14. FORMS VARIABLE

If the response to Item 13 above is "Y", the FORMS VARIABLE response is used to distinguish between Forms Variable (response = "Y") and Forms Complete (response = "N") modes.

15. NUMBER OF FILES ON DISKETTE

This value indicates the number of files currently stored on the diskette and corresponds exactly to the number of file names in the Directory of the diskette.

16. MAXIMUM NUMBER OF FILES PER DISKETTE

This value indicates the maximum number of files that can be stored on the diskette. This may be different for different diskettes. Item 16 minus Item 15 equals the number of files that can be added to the diskette before it becomes full.

17. MAXIMUM NUMBER OF SECTORS PER FILE

Fixed Length Files:

Comm-Stor stores files on the diskette in groups of 128 characters called sectors. Item 17 indicates the maximum number of sectors each file may occupy. To convert this to the maximum number of characters allowable in any file, multiply the numbers of sectors by 128.

Example: 5 sectors x 128 characters/sector = 640 characters. This may be different for different diskettes.

Variable Length Files:

Since files stored on a diskette configured for variable length files are not restricted to a certain size (other than the capacity of the diskette) this field will contain "+" characters rather than a numeric value. This provides the user with a quick means of determining if a diskette is configured for fixed length or variable length files.

18. MAXIMUM NUMBER OF CHARACTERS PER LINE

This value is used to set up the scratch pad when the Edit option is used and to determine how many characters per line the Editor will accept. This value may vary from diskette to diskette.

19. NUMBER OF LINES ON SCRATCH PAD

This specifies the maximum number of lines of characters the scratch pad area can accept. An attempt to exceed this value will result in an error message. This number varies from diskette to diskette.

20. NUMBER OF LINES PER PAGE

This indicates the number of lines that Comm-Stor will output to the terminal or printer before pausing to allow the operator to examine the screen (page). The next page will be displayed when the operator strikes any key on the terminal.

21. MAXIMUM NUMBER OF CHARACTERS IN FILE NAME

This value indicates the maximum number of characters in any file name. Specifying a name longer than this will cause an error.

22. MAXIMUM NUMBER OF CHARACTERS IN THE EXTENSION

This value indicates the maximum number of characters in any extension. Specifying an extension longer than this will cause an error.

23. CURRENT EXTENSION

Indicates the current extension for new files. Any new file created will have this extension until the extension is changed by using the Load Extension (.LE) command. If no extension has been entered, no output will appear. If an extension is specified (and allowed) in the command string (ex. .R ABLE+DEPT B.), then that extension will be used instead of the current extension. The current extension will, however, remain intact.

24. CURRENT AUTO-NAME

Indicates the next file name that will be used when the Enter Automatic or Receive Automatic command is used. If no Auto-Name has been entered, no output will appear.

STATUS STRING FORMAT

Sequence of characters sent to modem or terminal during a Send or Display Status operation. All multiple character strings may contain leading spaces.

2 Character String—Status Item #1
Space
1 Character —Status Item #2
Space . . .
. . . .
. . . .
. . . .
1 Character —Status Item #7
Carriage Return

Space
Character String —Status Item #8
Space
1 Character —Status Item #9
Space . . .
. . . .
. . . .
. . . .
1 Character —Status Item #14
Carriage Return
5 Character String—Status Item #15
5 Character String—Status Item #16
5 Character String—Status Item #17
5 Character String—Status Item #18
Carriage Return
5 Character String—Status Item #19
5 Character String—Status Item #20
5 Character String—Status Item #21
5 Character String—Status Item #22
Carriage Return
Character String —Status Item #23
(length = 1 maximum configured file name length)
Carriage Return
Character String —Status Item #24
(length = 1 maximum configured extension length)
Carriage Return

Notes:

1) All Carriage Returns at the terminal port are followed by a line feed. Line feed characters are added at the modem port for certain configurations.

2) Items 15 through 22 have a minimum of 1 leading space within the 5 character string.

3) Items 23 and 24 have a single space when no Auto-Name or extension exists.

APPENDIX E

DISPLAY DIRECTORY STATUS, LONG FORM

When using variable length files, the operator frequently needs to know the size of the largest free space and total space on a diskette. This information can be displayed at the terminal by the following command:

.DS L[CR] Display Status, Long Form

Note that this command is a combination of the Display Status Command (.DS) and the character L. The L character may be upper or lower case.

The Display Directory Status, Long Form command will display the contents of the entire Directory in sequential order followed by the size of the largest and the total free space, expressed in number of characters. Below is an example of a .DS L display.

This Directory display differs from the standard display (produced by .DD command) in the following ways:

a. There is no capability to select a range of files, the entire Directory must be displayed.

b. The Directory is always displayed sequentially.

c. Areas of free space are indicated by "+" characters.

d. An additional column (rightmost) showing number of characters required by the file has been added. Since data is stored in multiples of one or more sectors, the length of a file does not usually equal the number of characters set aside for it. For example, the 19 character file TST3 shown above actually requires 128 characters of disk space (one sector).

UNUSED ENTRIES = 8

TST102		0	128
TST103		0	128
TST104	SMITH	128	128
++++++++++++++++++++++		0	256
TST106		20	256
++++++++++++++++++++++		0	256
TST108	DEPTB	384	384
ABCDEFGHIJKLMN		10240	10240
TST2		0	128
TST3		19	128
++++++++++++++++++++++		0	1280
++++++++++++++++++++++		0	0
++++++++++++++++++++++		0	0
++++++++++++++++++++++		0	0
++++++++++++++++++++++		0	0
TST9	DEPTB	256	1280
TST10		20	16256
TST11		256	16384
TST12		32640	32640
++++++++++++++++++++++		0	126464

FREE SPACE = 128256

LARGEST SPACE = 126464

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APPENDIX F

INTERFACE SIGNAL CONNECTIONS

A. EIA RS-232-C CONNECTIONS

PIN	DESCRIPTION	TERMINAL PORT		MODEM PORT		PRINTER PORT	
		USED	DIRECTION	USED	DIRECTION	USED	DIRECTION
1	Chassis Ground	X	—	X	—	X	—
2	Transmitted Data	X	in	X	out		
3	Received Data	X	out	X	in	X	out
5	Clear to Send	X	in	X	out		
6	Data Set Ready	X	out	X	in	X	out
7	Circuit Ground	X	—	X	—	X	—
8	Carrier Detect	X	out	X	in	X	out
11	Secondary Request to Send	X	in	X	out	X	in
12	Secondary Carrier Detect	X	out	X	in		
20	Data Terminal Ready	X	in	X	out	X	in
22	Ring Indicator	X	out	X	in		

Note: Direction refers to signal direction with respect to Comm-Stor at each port, e.g., transmitted data is out of Comm-Stor on Pin 2 at the modem port.

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APPENDIX G

SYSTEM CONTRIBUTION CHANGES

This appendix permits the user to record those Configuration Parameter values that differ from the standard factory values. Two distinct system configurations may be recorded. The table should be completed immediately after a system is reconfigured, and is meant to reflect a particular system's configuration.

PARAMETER NUMBER	STANDARD FACTORY VALUE	SYSTEM VALUE	SYSTEM VALUE
1	YES	_____	_____
2	NO	_____	_____
3	[CR]	_____	_____
4	YES	_____	_____
5	[LF]	_____	_____
6	[CR]	_____	_____
7	[LF]	_____	_____
8	[ETX]	_____	_____
9	NO	_____	_____
10	NO	_____	_____
*11	[⌐D]	_____	_____
12	[⌐T]	_____	_____
13	SPACE	_____	_____
14	[ESC]	_____	_____
15	?	_____	_____
16	Ø	_____	_____
17	[⌐S]	_____	_____
18	[⌐Q]	_____	_____
19	[⌐S]	_____	_____
20	[⌐Q]	_____	_____
21	NO	_____	_____
22	NO	_____	_____
23	[CR], NONE, 1	_____	_____
24	[CR], NONE, 1	_____	_____
25	[CR], NONE, 1	_____	_____
26	[CR], NONE, 1	_____	_____
27	[RUB]	_____	_____
28	[BS]	_____	_____
29	[⌐X]	_____	_____
30	23	_____	_____
31	NO	_____	_____
32	YES	_____	_____
33	[⌐G]	_____	_____
34	NO	_____	_____
35	YES	_____	_____
36	[NULL]	_____	_____
37	NONE, 8, Ø	_____	_____
38	NONE, 8	_____	_____
39	11110, NO	_____	_____

*The (⌐) character represents a control code.

PARAMETER NUMBER	STANDARD FACTORY VALUE	SYSTEM VALUE	SYSTEM VALUE
40	NO		
41	NO		
42	YES		
43	[CR]		
44	NO		
45	200		
46	Ø		
47	NO		
48	[ETX]		
49	NO		
50	[␣F]		
51	[␣U]		
52	YES		
53	[NULL]		
54	NO		
55	YES		
56	NO		
57	INACTIVE		
58	NONE, 8, Ø		
59	NONE, 8		
60	YES		
61	YES		
62	NONE, 8, Ø		
63	1111Ø		
64	NO		
65	NO		
66	YES		
67	SPACE		
68	/		
69	<		
70	>		
71	+		
72	#		
73	*		
74	?		
75	**UNUSED**		
76	Y		
77	.		
78	,		
79	1		
80	2		
81	BM		
82	BP		
83	BT		
84	C		
85	CN		
86	D		
87	DD		
88	DS		
89	E		

PARAMETER NUMBER	STANDARD FACTORY VALUE	SYSTEM VALUE	SYSTEM VALUE
90	EA		
91	EM		
92	EX		
93	IM		
94	IX		
95	LE		
96	LI		
97	MM		
98	MX		
99	P		
100	PD		
101	R		
102	RA, RE		
103	S		
104	SD		
105	SS		
106	SM		
107	AM		
108	SB		
109	WE		
110	WP		
111	YES		
112	,		
113	/		
114	;		
115	ED		
116	SV		
117	A		
118	D		
119	I		
120	=		
121	Q		
122	L		
123	N		
124	R		
125	S		
126	YES		
127	[		
128	]		
129	FC		
130	FV		
131	FX		
132	[⌐Y]		
133	[⌐L]		
134	[⌐Z]		
135	[⌐O]		
136	[⌐N]		
137	[CR]		
138	NONE		
139	[⌐E]		

PARAMETER NUMBER	STANDARD FACTORY VALUE	SYSTEM VALUE	SYSTEM VALUE
140	NONE		
141	NO		
142	NO		
143	NO		
144	ØØ		
145	NO		
146	NO		
147	NO		
148	NO		
149	NO		
150	FC		
151	FV		
152	FX		
153	NO		
154	NO		
155	NO		
156	NO		
157	NO		
158	—		
159	NO		
160	[⌐A], [⌐A]		
161	[⌐L]		
162	[⌐B], [⌐B]		
163	[CR], [CR]		
164	[TAB], [TAB]		
165	[⌐Z]		
166	[⌐K]		
167	[⌐P]		
168	[⌐V]		
169	[⌐Y]		
170	[ETX]		
171	[⌐O]		
172	[⌐N]		
173	[⌐R]		
174	[RUB]		
175	\		
176	SPACE		
177	[⌐K]		
178	[LF]		
179	[CR]		
180	[⌐⌐]		
181	[⌐Z]		
182	[⌐W]		
183	*		
184			
185	NONE		
186	—		
187	?		
188	#		
189	SPACE		

PARAMETER NUMBER	STANDARD FACTORY VALUE	SYSTEM VALUE	SYSTEM VALUE
190	NO	_____	_____
191	YES	_____	_____
192	[CR]	_____	_____
193	[CR]	_____	_____
194	,	_____	_____
195	;	_____	_____
196	2	_____	_____
197	<, >	_____	_____
198	NO	_____	_____

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