CYBERNET® SERVICES

INTERCOM 5

Terminal User Guide

CONTROL DATA

INTERCOM 5 COMMANDS

Command	Page	Command	Page
BLOCK	2-7	MESSAGE	6-1
BSP	7-9	OFF	3-2, 7-2
CONTIN	3-7, 7-12	ON	3-2, 7-2
DEFINE	3-5, 7-7	PRIOR	5-6
DIVERT	5-1	READ	3-6
DROP	5-5	REVERT	5-4
END	3-3, 7-13	REW	7-10
EVICT	5-5	RTN	7-10
GO	3-8, 7-12, 7-13	SCREEN	2-6
H	4-1	SUP	7-3
LOGIN	2-2	WAIT	3-8, 7-12, 7-13
LOGOUT	2-8		

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REVISION RECORD

REVISION	DESCRIPTION
A	Manual released.
(12-01-78)	

LIST OF EFFECTIVE PAGES

New features, as well as changes, deletions, and additions to information in this manual, are indicated by bars in the margins or by a dot near the page number if the entire page is affected. A bar by the page number indicates pagination rather than content has changed.

PAGE	REV	PAGE	REV	PAGE	REV	PAGE	REV	PAGE	REV
Front Cover	-								
INTERCOM 5 Commands	-								
Title Page	-								
ii	A								
iii/iv	A								
v/vi	A								
vii	A								
viii	A								
1-1 through 1-3	A								
2-1 through 2-8	A								
3-1 through 3-12	A								
4-1 through 4-5	A								
5-1 through 5-7	A								
6-1	A								
6-2	A								
7-1 through 7-15	A								
A-1	A								
A-2	A								
B-1	A								
B-2	A								
C-1	A								
D-1	A								
D-2	A								
Index-1 through Index-4	A								
Comment Sheet	A								
Mailer	-								
Regulatory Notice	-								
Back Cover	-								

PREFACE

This manual describes the data processing conventions that apply when users of remote batch terminals access CDC® CYBERNET® Services and its SCOPE® 3.4 operating systems via the INTERCOM 5 communications subsystem. Other CYBERNET publications discuss how terminal users can access different CYBERNET systems, such as NOS™ and the CDC CYBER 76. The CYBERNET Services NOS and CDC CYBER 76 Batch Terminal User Guide (publication number 84000025) pertains to those systems. In addition, users can reference the following manuals for more information about SCOPE 3.4 as it is offered on the CYBERNET network.

Control Data Publication	Publication Number
CYBERNET Services SCOPE 3.4 Reference Manual	84000021
CYBERNET Services Network Access Guide	201,603

This product is intended for use only as described in this document. Control Data cannot be responsible for the proper functioning of undescribed features or undefined parameters.

CONTENTS

1. OVERVIEW 1-1

SCOPE 3.4 and INTERCOM 5 1-1
INTERCOM 5 Commands 1-2

2. TERMINAL LOGIN 2-1

Establishing Communications 2-1
Entering Login Information 2-2
Entering INTERCOM Commands 2-4
Adjusting the Display Screen 2-6
Selecting Transmission Block Size 2-7
Automatic Terminal Disconnect 2-7
Disconnect Recovery 2-7
Logoff Procedure 2-8

3. SUBMITTING JOBS FOR EXECUTION 3-1

Rules for Submitting Jobs 3-1
Configuring Card Readers 3-4
- HASP Multileaving Terminals 3-4
- IBM 2780/3780 Terminals 3-5
- Mode 4A Terminals 3-5

Reading in Jobs 3-6
Interrupting Card Reading 3-7
- Command/Message Entry Conventions 3-7
- Interrupting for Other Reasons 3-8

Initiating Reading While Printing Is In Progress 3-9
- Mode 4A Terminals 3-9
- HASP Multileaving Terminals 3-10
- IBM 2780/3780 Terminals 3-10

Handling Errors During Reading 3-11

4. MONITORING CENTRAL SYSTEM PROCESSING 4-1

5. MANIPULATING INPUT/OUTPUT QUEUES 5-1

DIVERT Command 5-1
REVERT Command 5-4
DROP Command 5-5
EVICT Command 5-5
PRIOR Command 5-6

6. SENDING AND RECEIVING MESSAGES 6-1

Sending Messages 6-1
Receiving Messages 6-1
- Mode 4A Terminals 6-1
- HASP Multileaving Terminals 6-2
- IBM 2780/3780 Terminals 6-2
- Message Format 6-2

7. HANDLING TERMINAL OUTPUT 7-1

Rules for Handling Output 7-1
Configuring Output Peripherals 7-6
Backspacing Output Files 7-9
Rewinding and Returning Output Files 7-10
- REW Command 7-10
- RTN Command 7-10

Interrupting Printing/Punching 7-12
- Command/Message Entry Conventions 7-12
- Interrupting for Other Reasons 7-12

Terminating Printing/Punching 7-13
Handling Errors During Printing/Punching 7-14

APPENDIXES

A Comparing EXPORT 200 and INTERCOM 5 A-1
B Comparing COPE 65 HASP and INTERCOM 5 B-1
C Carriage Control Characters C-1
D Character Sets D-1

INDEX

FIGURES

2-1	Successful Login	2-4	4-3	Punch Queue Display	4-4
4-1	Input Queue Display	4-3	4-4	Display of Jobs in Execution	4-4
4-2	Print Queue Display	4-3	4-5	Device Status Display	4-5

TABLES

1-1	Terminal Equipment Limitations	1-1	4-1	H Displays	4-1
1-2	INTERCOM 5 Commands	1-2	5-1	DIVERT Options	5-2
2-1	INTERCOM 5 Command Conventions	2-4	7-1	Rules for Handling Job Output	7-1
2-2	Typical Display Screen Formats	2-6	7-2	Output Device Characteristics	7-7
3-1	Rules for Submitting Jobs	3-1	7-3	Error Messages Received During Output Transmission	7-14
3-2	Error Messages Received During Reading	3-11			

SCOPE 3.4 AND INTERCOM 5

CYBERNET users of remote batch terminals can access SCOPE 3.4 systems and submit jobs for execution via the INTERCOM 5 communications subsystem. INTERCOM 5 can be used by batch terminals that employ the following communication protocols.

Protocol	Meaning
CDC Mode 4A	Accommodates terminals that employ the communication protocol that is defined by the CDC® 200 User Terminal. Other terminals that can employ the Mode 4A protocol include the CDC® CYBER 18 Remote Batch Terminal, DATA 100 Models 74, 76, and 78, CDC® 734 Remote Batch Terminal, and Harris COPE Models 1200 and 1600. This manual refers to terminals that employ the Mode 4A protocol as Mode 4A terminals.
IBM HASP multileaving	Accommodates terminals that use the HASP multileaving protocol which is a subset of the BISYNC link control protocol. INTERCOM 5 supports the multileaving protocol but does not use the HASP control language. Terminals that can employ the HASP multileaving protocol include the CDC CYBER 18 Remote Batch Terminal, Harris COPE Models 1200 and 1600, DATA 100 Model 78, and IBM 370. This manual refers to terminals that employ the HASP multileaving protocols as HASP multileaving terminals.
IBM 2780/3780	Accommodates terminals that use the IBM 2780/3780 protocol which is a subset of the BISYNC link control protocol. Terminals that can employ the IBM 2780/3780 protocol include the CDC CYBER 18 Remote Batch Terminal, CDC 734 Remote Batch Terminal, Harris COPE Models 1200 and 1600, and DATA 100 Model 78. This manual refers to terminals that employ the IBM 2780/3780 protocol as IBM 2780/3780 terminals.

Special limitations govern the kind and number of peripheral devices that can be configured with each type of terminal. Table 1-1 presents these limitations.

TABLE 1-1. TERMINAL EQUIPMENT LIMITATIONS

Terminals	Card Readers	Line Printers	Card Punches
Mode 4A	1 (CR1)	1 (LP1)	0
HASP multileaving	7 (CR1 through CR7)	7 (LP1 through LP7)	7 (CP1 through CP7)
IBM 2780/3780	1 (CR1)	1 (LP1)	1 (CP1)

In general terms, INTERCOM 5 lets users of remote batch terminals perform the following functions. Subsequent sections in this manual discuss these functions.

1. Log in to a CYBERNET SCOPE 3.4 system (section 2)
2. Enter a job through the terminal card reader for batch execution (section 3)

3. Follow the progress of a job by reviewing displays of the system's input queue, output queue, and execution activity (section 4)

4. Manipulate jobs in the input queue and job output in the output queues with INTERCOM 5 commands (section 5)

5. Send messages to and receive messages from the central site (section 6)

6. Handle job output on terminal peripheral devices (section 7)

7. Log off the system (section 2)

In addition, the following appendixes appear in this manual with information that relates to INTERCOM 5.

Appendix	Topic
A	Comparison of INTERCOM 5 with EXPORT/IMPORT 2
B	Comparison of INTERCOM 5 with COPE HASP
C	Carriage control characters related to INTERCOM 5
D	Terminal character sets related to INTERCOM 5

INTERCOM 5 COMMANDS

Table 1-2 lists the commands that an INTERCOM user can enter to a SCOPE 3.4 system. Users can abbreviate certain commands. Check the commands listed in table 1-2 for underlining to determine which specific commands can be abbreviated and what abbreviations are valid. Section 2 describes conventions that govern the issuance of all INTERCOM commands. The remainder of the manual discusses these commands in detail.

TABLE 1-2. INTERCOM 5 COMMANDS

Command	Function
BLOCK	Changes the transmission block length (physical buffer size) of a HASP multileaving or IBM 2780/3780 terminal.
BSP	Backspaces an output file by a specified number of file sectors.
CONTIN	Resumes terminal input/output that was interrupted by the terminal user or by a message from the central site; applies to Mode 4A terminals only.
DEFINE	Configures a terminal input or output device in terms of specific attributes.
DIVERT	Diverts job output from the job originator to either the central site or another user.
DROP	Drops a specific job while the job is in execution.
END	Terminates card reading, line printing, or card punching of a particular job.
EVICT	Drops a specific job from a particular queue.

TABLE 1-2. INTERCOM 5 COMMANDS (Contd)

Command	Function
GO	Resumes card reading, line printing, or card punching that was interrupted by a WAIT command.
H	Displays the contents of a particular queue. Also can display terminal equipment status.
LOGIN	Requests access to the central system.
LOGOUT	Terminates the terminal session.
MESSAGE	Transmits a message to the central site operator.
OFF	Turns a specific terminal peripheral device logically off.
ON	Turns a specific terminal peripheral device logically on.
PRIOR	Changes the priority of a job while the job resides in the input queue or while its output resides in an output queue.
READ	Initiates reading from a terminal card reader so that the job being read will be submitted to the system's input queue.
REVERT	Reverses the effect of the DEF parameter in an earlier DIVERT command so that future job output will be available to the job originator (instead of being diverted to another user or the central site).
REW	Rewinds a specified output file that is currently being handled at the user's terminal and returns it to the central system's print or punch queue.
RTN	Rewinds a specified output file that is currently being handled at the user's terminal and returns it to the central system's print or punch queue with a particular priority.
SCREEN	Selects a new screen format for the terminal's display screen.
SUP	Suppresses the carriage control characters that appear within a specific output file.
WAIT	Temporarily suspends terminal card reading, printing, or punching. The suspended device will resume operation once the user issues a GO command.

TERMINAL LOGIN 2

Section 2 presents information on the following subjects while discussing terminal login to a SCOPE 3.4 system via INTERCOM 5.

- Establishing communications
- Entering login information
- Adjusting the display screen
- Automatic terminal disconnect
- Disconnect recovery
- Logoff procedure

ESTABLISHING COMMUNICATIONS

The following steps enable the user of a remote batch terminal to establish communication between the terminal and the central SCOPE 3.4 system.

1. Users of Mode 4A terminals must set the terminal's site address to 160_8.
2. Turn on the terminal's power.
3. Lift the data set receiver, press the TALK button, and wait for a dial tone.†
4. Dial the telephone number of a SCOPE 3.4 system. See your local Control Data sales representative or the CYBERNET Services Network Access Guide for the phone numbers that allow a user to access a SCOPE 3.4 system via INTERCOM 5. Before a user can access any CYBERNET system, CYBERNET Services must validate the user for the particular system that he or she wants to access.†
5. If the central system replies with a busy signal or does not answer, hang up and try again. Call CYBERNET Customer Service if this condition persists.
6. If the system is ready to be accessed, the central site will respond with a high-pitched tone. Press the DATA button on the set and hang up the data receiver.†
7. The system responds with the following message to indicate that communication has been established.

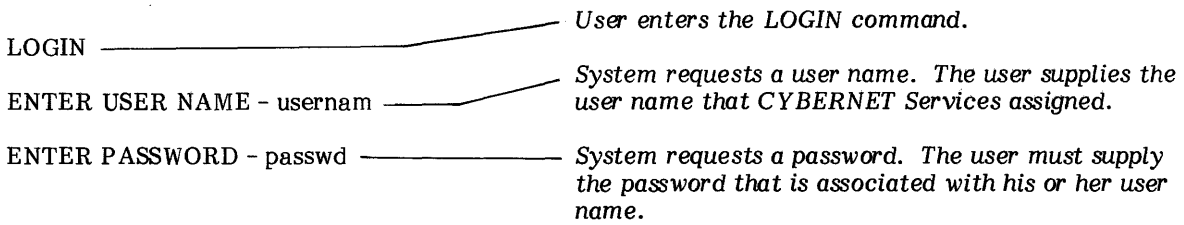
```
center name

DATE   mm/dd/yy
TIME   hh/mm/ss.

PLEASE LOGIN
```

†Not applicable to terminals that employ a dedicated line.

ENTERING LOGIN INFORMATION

Once the user receives the message that indicates a successful communications link, the user must initiate the terminal session by entering a LOGIN command. Users of Mode 4A terminals and HASP multileaving terminals enter the command via the terminal keyboard. Users of IBM 2780/3780 terminals enter the command via the terminal card reader.

When the user enters the LOGIN command in its simplest form, the system prompts the user for more information. The following sequence illustrates this convention.



When the user supplies the LOGIN command with additional parameters, the following conventions apply.

LOGIN,usernam,passwd,SUP

where:

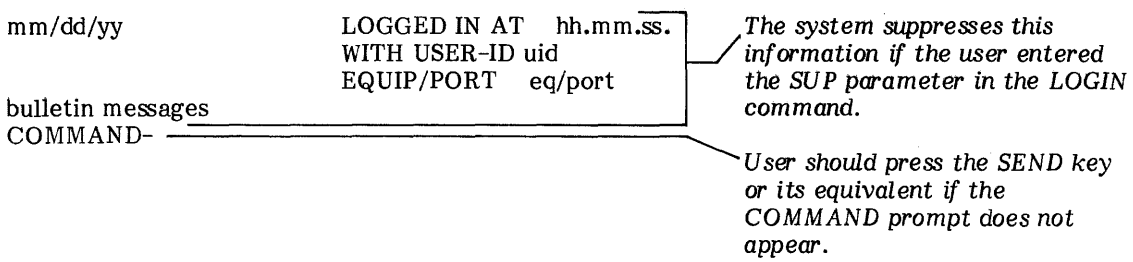
usernam = user name that CYBERNET Services assigned to the user. If the user omits the user name and password entries, the system will prompt the user for this information. The user cannot omit a user name while supplying the passwd and SUP parameters.

passwd = password that must accompany the user-supplied user name. If the user omits the user name and password entries, the system will prompt the user for this information. The user cannot omit a password while supplying the usernam and SUP parameters.

SUP = optional entry that instructs the system to suppress the login message that normally follows a successful login. Users can supply the SUP parameter only if they also supply the usernam and passwd parameters.

Once the user supplies a user name and password, the system checks these entries to make sure they constitute a previously validated combination. In addition, it checks whether the user-entered combination is currently in use at any other terminal logged in to INTERCOM 5. (INTERCOM 5 prevents two different terminals from accessing the system simultaneously under the same user id.) The system will respond to these entries in the following ways:

- If it determines that the user name/password combination is valid and if the user id is not currently being used at another terminal, the system responds with the following message:



where:

mm/dd/yy = date when login is completed.

hh.mm.ss = time when login is completed.

uid = 2-character identifier that the system associates with the user's login user name.

eq = ordinal that identifies the multiplexer that is handling the user's terminal communication during this processing session. This identifier helps CYBERNET personnel locate malfunctioning communication lines. Users should also take note of this identifier in case it is referenced in messages from the central site. For example, a specific multiplexer is referenced in the following message.

MUX eq WILL GO DOWN IN nn MINUTES

port = ordinal that identifies the port that is handling the user's terminal communication during this processing session. This identifier helps CYBERNET personnel locate malfunctioning communication lines.

bulletin = system bulletin generated by the CYBERNET Center that operates the central SCOPE 3.4 system.

- If the system determines that the user entered an invalid user name/password combination, it transmits the following message.

  INVALID USER NAME OR PASSWORD

  Then, the system will ask the user to reenter a user name. After the user enters a user name, the system will prompt the user for a password.

- If operations personnel at the central site have temporarily locked out new terminal users, the system will transmit the following message.

  LOGIN NOT PERMITTED AT THIS TIME

  The user should try to log in later. If this message persists, the user should contact CYBERNET Customer Service.

- If a user tries to log in under a user name/password combination that is already being employed by another user logged in to INTERCOM 5, the system will not allow the new user access and will transmit the following message.

  USERNAME/PASSWORD IN USE AT ANOTHER TERMINAL

- If the user fails to enter a valid user name/password combination after three attempts, INTERCOM 5 disconnects the terminal from the central system and sends the following message.

  YOU HAVE HAD THREE TRIES-GET HELP

The login user name and password identify the user for terminal operations. These identifiers do not necessarily pertain to the accounting information that the user must supply in each SCOPE 3.4 job deck. The USER control card and PROJECT control card in the user's job deck supply a user name and a project number that apply to the execution of the user's job.

Figure 2-1 presents a typical login procedure that was performed successfully.

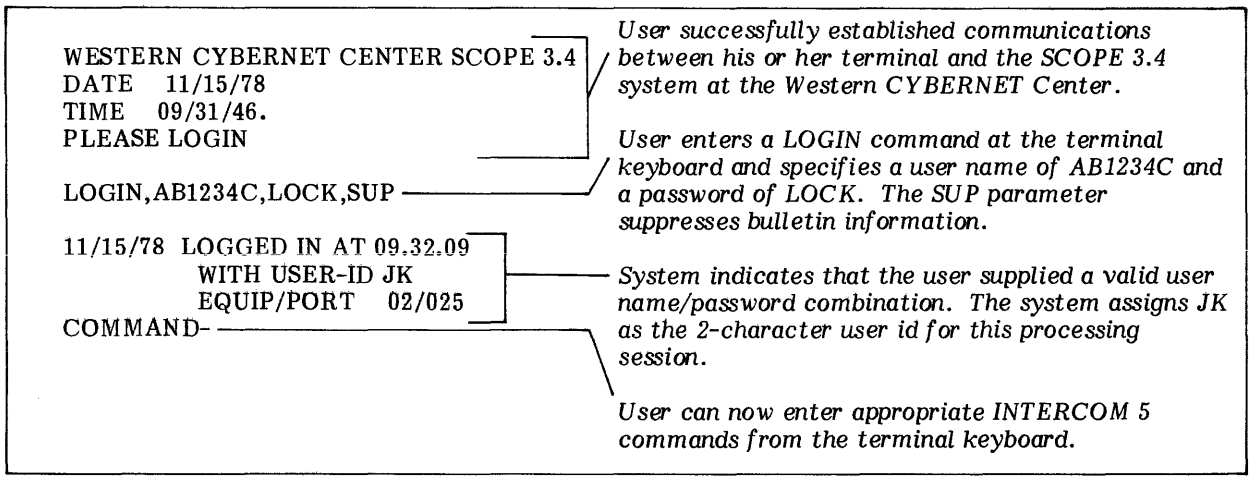


Figure 2-1. Successful Login

ENTERING INTERCOM COMMANDS

After successfully logging in, the user can enter any of the INTERCOM commands described in table 1-2. Table 2-1 presents the general conventions that users must observe when entering INTERCOM commands.

TABLE 2-1. INTERCOM 5 COMMAND CONVENTIONS

Topic	Convention
Terminal hardware conventions	Users of Mode 4A terminals and HASP multileaving terminals enter INTERCOM commands via their terminal keyboards. Users of IBM 2780/3780 terminals enter INTERCOM commands via terminal card readers.
Transmitting commands	Users of Mode 4A terminals send an INTERCOM command by pressing the SEND key or its equivalent. Users of HASP multileaving terminals should reference the operator manuals distributed by the terminal manufacturer to determine how to send a command. Conventions vary from one manufacturer to another (for example, COPE terminal users employ the carriage return). Users of IBM 2780/3780 terminals can send an INTERCOM command by either of the following procedures. • Punch an ETX character (a 12/3/9 multipunch) immediately after the INTERCOM command on the same card as the command or enter a card with an ETX character in column 1 immediately after the card containing the command.

TABLE 2-1. INTERCOM 5 COMMAND CONVENTIONS (Contd)

Topic	Convention
Transmitting commands (Contd)	• Place the card containing the command in the card reader, press the EOF key or the STX key or their equivalent, and press the card reader's START key until the READY indicator is lit.
Command formats	Most INTERCOM commands consist of the command name followed by one or more parameters.
Abbreviating commands	Certain INTERCOM commands can be abbreviated by entering the first alphabetic character in the command name. Table 1-2 designates these commands by underlining those abbreviations that are valid; no other abbreviations are acceptable.
Command terminators	INTERCOM commands do not require terminators. However, users can supply a period or right parenthesis as an optional command terminator. A command cannot terminate with a comma. In addition, users cannot enter a terminator after supplying a user name or password in response to a system prompt.
Parameter separators	When an INTERCOM command requires one or more parameters, the user must separate the parameters from the command name by entering a comma, blank, or left parenthesis. Parameters must be separated from each other by a comma.
Order-dependent parameters	Except in the DEFINE command, all INTERCOM command parameters are order-dependent. In other words, they must be entered in the sequences shown in the command formats presented in this manual.
Default parameters	Users can specify a default for most parameters by omitting the parameter and supplying a comma for the omitted value. Exceptions to this general rule are noted when the command format is presented.
Erroneous commands	If a user enters an INTERCOM command in an incorrect format or if the system does not recognize a user entry as a valid command, the system transmits one of the following messages. COMMAND IGNORED or FORMAT ERROR or NO SUCH PROGRAM CALL NAME-xxxx or YOU ARE NOT AUTHORIZED TO USE THIS PROGRAM Violation of the following rules causes the system to generate these messages. • The first character of a command name must be alphabetic. Leading blanks are not allowed.

TABLE 2-1. INTERCOM 5 COMMAND CONVENTIONS (Contd)

Topic	Convention
Command length	• No command name can exceed 7 characters. • The entire command (including parameters) cannot exceed 80 characters. • Mandatory parameters must be supplied. No INTERCOM command can exceed 80 characters. In addition, the command name and command parameters must appear in one line of keyboard input (Mode 4A terminals and HASP multileaving terminals) or on one punch card (IBM 2780/3780 terminals).

ADJUSTING THE DISPLAY SCREEN

Because terminal display screens are not necessarily similar in size from one manufacturer to another, the terminal user may have to instruct SCOPE 3.4 to adjust for the terminal screen. By default, the system assumes the user's display screen has a 50 by 20 format. Users enter the SCREEN command to adjust to other formats. Users must take care to select a proper screen format for their terminals. If the terminal operates under an incorrect format, both display data and print data may be lost. The SCREEN command takes the following form.

SCREEN,width,length

where:

width = number of characters that are spaced horizontally across the screen of the user's display. See table 2-2 for a list of screen formats that apply to different terminals.

length = number of lines spaced vertically down the user's display. See table 2-2 for a list of screen formats that apply to different terminals.

Default: If the user enters the SCREEN command without entering the width and length parameters, the system assumes the user's display screen operates with the default format of 50 by 20. The system also sends the following message.

SCREEN SIZE W=50, L=20

Table 2-2 lists the display screen formats that apply to specific remote batch terminals.

TABLE 2-2. TYPICAL DISPLAY SCREEN FORMATS

Terminal	Format	Terminal	Format
CDC 200 User Terminal	50 x 20 or 80 x 13	CDC 734	50 x 20 or 80 x 13
CDC 731	50 x 20 or 80 x 13	HASP multileaving	80
		IBM 2780	Printer is used for display
CDC 732	50 x 20 or 80 x 13	IBM 3780	Printer is used for display

SELECTING TRANSMISSION BLOCK SIZE

Users of HASP multileaving and IBM 2780/3780 terminals can enter the BLOCK commands to select a transmission block size that matches the buffer size of their terminal. Under SCOPE 3.4, HASP multileaving and IBM 2780/3780 terminals can use either a 400-character buffer or an 800-character buffer. By default, the system assumes these terminals employ a 400-character buffer. Because only selected HASP multileaving terminals allow the extended block length, users should check their terminal operator manuals to determine what buffer size applies to their terminal.

The BLOCK command takes the following form.

BLOCK,blength

where:

blength = transmission block length that the user wants to select for the terminal. Valid entries for the blength parameter are:

800 = an 800-character block length.

400 = a 400-character block length; default.

AUTOMATIC TERMINAL DISCONNECT

In order to protect users from excessive communications charges and to more efficiently utilize the CYBERNET telecommunications network, SCOPE 3.4 automatically disconnects a terminal if the terminal remains in an idle state for a prolonged period of time. With respect to batch terminals, a terminal is considered to be idle when it is not issuing an INTERCOM command, reading card input, or printing output. When the system disconnects the user's terminal in these circumstances, it sends the following message.

FORCED LOGOUT DUE TO INACTIVITY

In this situation, the system will not transmit the summary information that is displayed during a normal logout.

DISCONNECT RECOVERY

The user's terminal can be disconnected from the central system for a variety of reasons, including:

- System's automatic disconnect procedure
- Telecommunication difficulties
- Hardware problems at the central site
- Hardware problems at the terminal

Users can determine whether a batch terminal has been disconnected by checking the terminal or data set ON LINE indicator or its equivalent. If the ON LINE indicator is not lit or flashing, the terminal is not in communication with the central site.

In most situations, users will be able to recover processing if they attempt recovery within 6 minutes of the disconnect. Recovery can be attempted from the original terminal or any other available terminal, but the user must log in under the same user name/password as the original login.

To recover processing, a user must:

1. Log in to the system in the normal manner.

2. Supply the same login user name/password that was entered during the earlier login. SCOPE 3.4 will not generate any bulletin messages during the recovery.

3. Wait for the system to send the following messages. This message indicates that recovery was successful and that the user can enter a valid INTERCOM command.

   COMMAND-

4. If the disconnect occurred while a job was being read in from the terminal card reader, the entire job must be reinitiated. Similarly, if the disconnect occurred while job output was being printed at the terminal, the system will resume printing after recovery by starting at the beginning of the output file.

   The system will recover the terminal's screen size to accommodate any SCREEN command that the user may have issued in the original session.

LOGOFF PROCEDURE

A user can log off the terminal from the central system by entering the LOGOUT command in the following form.

LOGOUT

In response, SCOPE 3.4 displays the following information to summarize the terminal-related activity performed by the user.

```
ISSN, xxxxx TOTAL SBUs NON APPLICATION
CONNECT TIME  zzzzz.
TIO  yyy CHRS.
mm/dd/yy LOGGED OUT AT hh.mm.ss.
```

where:

xxxxx	=	number of system billing units (SBUs) that were employed to execute user-supplied INTERCOM commands. The system supplies this data only for informative purposes. Users are not billed for this activity.
zzzzz	=	amount of time (expressed in terms of hours and minutes) that the user's terminal was connected to the central system.
yyy	=	total number of characters transmitted between the user's terminal and the central system as part of a keyboard entry or displayed as a part of a system-generated message, diagnostic, or response. The system supplies this data only for informative purposes. Users are not billed for this activity.
mm/dd/yy hh.mm.ss	=	date and time when logoff occurred.

SUBMITTING JOBS FOR EXECUTION 3

RULES FOR SUBMITTING JOBS

Typically, after logging in the terminal, the user will submit a job for execution via the terminal card reader. Table 3-1 lists the general rules that pertain to submitting jobs.

TABLE 3-1. RULES FOR SUBMITTING JOBS

Topic	Rule
Job deck format	Users submit jobs from a terminal card reader in the same format as job decks entered at the central site. In other words, the first record in the job deck must contain SCOPE 3.4 control statements to direct the system. Remaining records in the job must be delimited by end-of-record indicators. If the user stacks more than one job deck in the reader, each job must be delimited by an end-of-information card.
Special INTERCOM 5 card deck convention	The following special conventions apply to job decks entered to the system via INTERCOM 5. • Mode 4A, HASP multileaving, and IBM 2780/3780 terminals cannot read column binary cards. • HASP multileaving terminals and IBM 2780/3780 terminals can read transparent (unconverted) 8-bit data. • Mode 4A terminals recognize only 7/8/9 cards as end-of-record indicators and only 6/7/8/9 cards as end-of-file/end-of-information indicators. • IBM card readers treat a multipunch of 6/7/8/9 in column 1 as an error. As a result, users of HASP multileaving terminals and IBM 2780/3780 terminals must abide by special conventions for reading in the following cards. Card: End-of-record — Convention: /*EOR in columns 1-5 or 7/8/9 multipunch in column 1 Card: End-of-information — Convention: /*EOI in columns 1-5 On HASP multileaving terminals, /*EOS in columns 1-5 represents an end-of-stream and terminates the card input stream.

TABLE 3-1. RULES FOR SUBMITTING JOBS (Contd)

Topic	Rule
Turning reader on and off	Before the user actually instructs the system to read in a job deck, the terminal card reader must be logically turned on. When the user logs in initially, the reader is logically on by default. The user can enter the following to turn the reader logically off. OFF,CRn where: n = ordinal that identifies which terminal card reader should be turned off. Default: If the user omits the n value, the system turns off CR1. If the user turns the card reader logically off with an OFF command, the user must enter the following command to turn on the reader before any subsequent job can be submitted from the card reader. ON,CRn where: n = ordinal that identifies which terminal card reader should be turned on. Default: If the user omits the n value, the system turns on CR1.
Configuring terminal card reader	Before SCOPE 3.4 reads a job from a terminal card reader, it must know what punch code (026 or 029) is used by the reader. The system "configures" one card reader for Mode 4A and IBM 2780/3780 terminals. Users of Mode 4A terminals choose a hardware setting on their terminals to select 026 or 029. For IBM 2780/3780 terminals, the central system assumes 029 by default. Users of IBM 2780/3780 terminals enter the DEFINE command to select 026 as an option. The central system also "configures" one card reader for HASP multileaving terminals. However, users can configure up to six additional readers for a HASP multileaving terminal by issuing the DEFINE command. By default, the system assumes that all configured readers employ 029.
Reading in a job	Users submit a job for SCOPE 3.4 execution by entering the following command. READ,CRn See the subsection on "Reading in Jobs" for more information.

TABLE 3-1. RULES FOR SUBMITTING JOBS (Contd)

Topic	Rule
Interrupting card reading	Users of Mode 4A terminals must interrupt card reading to enter commands or messages from the terminal keyboard. See the subsection on "Interrupting Card Reading" for more information. Users of HASP multileaving terminals do not need to interrupt card reading to enter a command or message via terminal keyboard. However, to interrupt card reading for some other reason (for example, to avoid a card jam), the user can enter the WAIT command. The user can resume card reading by entering a GO command. See the subsection on "Interrupting Card Reading" for more information. Users of IBM 2780/3780 terminals cannot interrupt card reading and subsequently resume reading from an intermediate position in the submitted job. Instead, they can only interrupt reading and resubmit the entire job later. Users should review appropriate terminal operator guides for information on how to interrupt card reading on specific terminals.
Initiating reading while printing is in progress	Mode 4A terminals and HASP multileaving terminals employ an interleaving convention that enables read operations and print operations to be alternated. See the subsection on "Initiating Reading While Printing Is In Progress" for more information. IBM 2780/3780 terminals do not accommodate interleaved read/print operations. Accordingly, when the terminal is receiving output on its printer, card reading cannot be initiated.
Terminating reading in progress	To terminate a card reading operation in progress, users enter an END,CR command. Users of Mode 4A terminals must interrupt reading to unlock their keyboards before issuing this command. Users of HASP multileaving terminals can enter this command without interrupting reading. Users of IBM 2780/3780 terminals must interrupt the reading of the job deck and then enter the END,CR command via the card reader. The END,CR command takes the following form. END,CRn where: n = ordinal that identifies the specific card reader whose reading should be terminated. Default: If the user omits the n value, the system terminates reading at CR1.

TABLE 3-1. RULES FOR SUBMITTING JOBS (Contd)

Topic	Rule
Terminating reading in progress (Contd)	Once the central system processes the END command, it terminates job input (the submitted job is not sent to the SCOPE 3.4 input queue) and discards all card data read in from the last end-of-information to the next end-of-file/-end-of-information. When the user stacks more than one job in the card reader, the END command terminates the current job only. (Earlier jobs are not affected by the END command.) After the system processes the END command and discards the current job, the system resumes reading subsequent jobs from the card reader only if the user reinitiates reading with a READ command. Certain terminals (such as the CDC 200 UT) look ahead while reading cards. Accordingly, input discarded by an END command can include cards from the next job stacked in the card hopper. The user must reload the cards that were "read ahead" and also reload the job in which they appear before issuing a subsequent READ command. For example, card input discarded on a CDC 200 UT may include up to 11 cards from the next job in the stack. The user must reload these cards and the job in which they appear before resuming reading with a new READ command.
Normal reading termination	The system automatically terminates card reading when: 1) the card reader's hopper is empty, and 2) the last card read in was an end-of-information. See the subsection on "Reading in Jobs" for information on how the system acts when the hopper is empty but the last card read is not an end-of-information.
Errors encountered during reading	See the subsection on "Errors During Reading" for information about the error messages the user receives at the terminal if the system encounters an error while reading a job.

CONFIGURING CARD READERS

HASP MULTILEAVING TERMINALS

Before the system can read a job from a terminal card reader, it must know what punch code (026 or 029) is employed by the reader. If a HASP multileaving terminal has only one card reader, the system designates the reader as CR1 and assumes the reader employs the 029 punch code.

However, if a HASP multileaving terminal has more than one card reader, the user must "configure" the extra readers before the system will read jobs from these readers. The DEFINE command allows users to configure extra readers. In addition, if the user wants to modify the system's 026 assumption about the default reader, the user can employ the DEFINE command.

The DEFINE command takes the following form when used to configure a card reader.

DEFINE,CRn,punopt

where:

n = ordinal that identifies which specific terminal card reader is being configured. Seven card readers (CR1 through CR7) can be configured at a HASP multileaving terminal. Default: If the user omits the n value, the system assumes the user wants to configure CR1.

punopt = punch code that applies to the reader being configured.

Valid entries for the punopt parameter are:

026 = Hollerith punch code
029 = ASCII punch code; default.

For example, the user of a HASP multileaving terminal must enter the following commands to configure two extra card readers (CR2 and CR3). Assume that CR2 uses the 029 code and CR3 uses the 026 code.

DEFINE,CR2

DEFINE,CR3,026

IBM 2780/3780 TERMINALS

Users of IBM 2780/3780 terminals can have only one card reader at their terminals. By default, the central system assumes CR1 employs the 029 punch code. However, if the reader employs 026, the user must issue the following DEFINE command before reading can begin from this reader.

DEFINE,CR1,026

MODE 4A TERMINALS

The DEFINE,CR command is not applicable to users of Mode 4A terminal card readers because users choose 026 or 029 by selecting a hardware setting.

READING IN JOBS

After the user logs in the terminal, readies the terminal card reader, and turns the reader logically on (the reader is logically on by default), the user can submit a job deck for SCOPE 3.4 execution by performing the following procedures.

1. Place the job deck in the card reader's hopper. Users can stack more than one job in the hopper. End-of-information cards must appear to delimit each job.

2. Load the card reader buffer. For example on CDC 200 UT terminals, press the LOAD key or its equivalent.

3. If the user employs a terminal whose keyboard locks during printing (Mode 4A terminals) and if output is currently being printed at the terminal, interrupt terminal printing. See "Handling Terminal Output" in section 7 for more information on how to interrupt printing in progress.

4. Enter the READ command in the following form.

   READ,CRn

   where:

   n = ordinal that identifies the terminal card reader from which the job should be read. Default: If the user omits the n value or omits the CRn parameter in its entirety, the system reads the job from CR1.

5. The system will read the first job in the hopper. Once it encounters an end-of-information card, the system places the job in the SCOPE 3.4 input queue.

6. After the system reads an end-of-information, the hopper must be empty or the next card must be a SCOPE 3.4 job control statement or a $SEQUENCE card. The system will ignore extra end-of-information cards that follow each other.

7. Card reading continues until the hopper is empty.

8. The last card read in must be an end-of-information card. If the system determines that the hopper is empty but the last card read was not an end-of-information, it sends the following message.

   CRn NOT READY

   where:

   n = ordinal identifying the terminal card reader.

   The user must perform the following steps to continue reading.

   - Place more cards in the hopper.
   - Load the card reader buffer.
   - Issue the following command.

     GO,CRn

where:

n = ordinal identifying the terminal card reader. Default: If the user omits the n value, the system resumes reading on CR1.

9. Once the hopper is empty and the last card read in is an end-of-information, users of Mode 4A terminals and IBM 2780/3780 terminals can add more job decks and reinitiate reading only by issuing a new READ command.

   However, users of HASP multileaving terminals can reinitiate reading under these circumstances without having to enter a new READ command. At these terminals, reading is permanently terminated only when the system encounters a /*EOS card and the hopper is empty, or if the user enters an END command to terminate card reading. The system will ignore any card data read following a /*EOS card. The HASP user can reinitiate a job under these conditions only by entering a new READ command.

On Mode 4A terminals, card reading will interrupt when a central site operator sends a message to the terminal display. After the message has been displayed, the terminal user can resume card reading by issuing the CONTIN command.

Card reading also interrupts if the SCOPE input queue overloads during a heavy job load. In this case, the system places the card reader in a wait state and sends the following message.

INPUT SUSPENDED BY SYSTEM

Before reading can resume, users must reissue the READ command when space becomes available in the input queue. When input is suspended, the system will ignore all GO commands and READ commands that reference a card reader. All other commands, including the END command, are allowed even if they refer to a card reader.

INTERRUPTING CARD READING

COMMAND/MESSAGE ENTRY CONVENTIONS

Mode 4A Terminals

In order to enter a command or message from the terminal keyboard while card reading is in progress, users of Mode 4A terminals must first interrupt reading. The following procedure allows the user to interrupt terminal card reading on a Mode 4A terminal.

1. Press the interrupt key or its equivalent.
2. Wait for the card reading to stop and the keyboard to unlock.
3. Clear the display screen (if necessary).
4. Enter the appropriate command or message on the keyboard.
5. In most cases, reading resumes automatically after the user transmits the command. However, if reading does not resume, the user should enter the CONTIN command in the following form.

CONTIN

HASP Multileaving Terminals

Users of HASP multileaving terminals do not need to interrupt card reading to enter a command or message. The keyboards on these terminals do not lock while the terminal is reading or printing.

IBM 2780/3780 Terminals

Users of IBM 2780/3780 terminals must terminate card reading entirely to enter a command. In this case, the user interrupts reading by following the interrupt procedure associated with the terminal. Then, the user enters the appropriate command or message. Because the terminal cannot resume reading from an intermediate position in the job, the user must resubmit the job in its entirety from the card reader.

INTERRUPTING FOR OTHER REASONS

Mode 4A Terminals

Users of Mode 4A terminals must always perform the interrupt procedure described under "Interrupting Card Reading (Command/Message Entry Conventions)" in order to interrupt reading for any reason. Once reading halts, the user can enter the WAIT command in the following form to make certain that subsequent INTERCOM commands will not resume reading.

WAIT,CR

The user can resume card reading (at the position in the job deck where the interruption occurred) by entering the GO command in the following form.

GO,CR

HASP Multileaving Terminals

Users of HASP multileaving terminals can interrupt reading by entering the WAIT command in the following form. (These users do not need to perform any special procedure before issuing this command.)

WAIT,CRn

where:

n = ordinal that identifies which terminal card reader should be interrupted. Default: If the user omits the n value, the system assumes CR1 should be interrupted.

The user can resume card reading (at the position in the job deck where interruption occurred) by entering the GO command in the following form.

GO,CRn

where:

n = ordinal that identifies the terminal card reader whose reading should be resumed. Default: If the user omits the n value, the system assumes that reading should resume at CR1.

IBM 2780/3780 Terminals

Users of IBM 2780/3780 terminals cannot interrupt a read operation in progress and subsequently resume the transmission from the point in the job deck where the interruption occurred. Any interruption of a read operation requires that the entire job be resubmitted.

INITIATING READING WHILE PRINTING IS IN PROGRESS

MODE 4A TERMINALS

Users of Mode 4A terminals can initiate card reading while printing is in progress by performing the following procedure.

1. Ready the card reader.
2. Place one or more job decks in the reader's hopper.
3. Load the card reader buffer by pressing the LOAD key or its equivalent.
4. Interrupt the current print operation by performing the following steps.
    - Press the interrupt key or its equivalent.
    - Wait for the printing to stop and the terminal keyboard to unlock.
    - Clear the display screen (if necessary).
5. Enter the following command.

    READ

6. Card reading will be initiated and printing will resume. Reading and printing are performed alternately because the read and print operations share the communication link to the central system. This interleaving of reading and printing causes the terminal to send a buffer of card reader data and receive a buffer of print data.
7. The interleaving of read and print data causes the terminal to perform these operations more slowly than if they were being handled separately. Users can temporarily suspend printing and speed up reading by performing the following procedure.
    - Interrupt both reading and printing by: 1) pressing the interrupt key or its equivalent, 2) wait for reading/printing to stop and the keyboard to unlock, 3) clear the display screen.
    - Enter the following command to temporarily suspend printing.

        WAIT,LP

    - After the WAIT command is sent, the terminal resumes card reading from the point of interruption. Since printing is suspended, reading will continue nonstop, without alternating with any other output operation.

- Once the terminal completes card reading, the user can resume printing by entering the following command.

GO,LP

HASP MULTILEAVING TERMINALS

Users of HASP multileaving terminals can initiate card reading while printing is in progress without having to interrupt printing. In this case, users simply ready the card reader, place one or more job decks in reader's hopper, and issue the following READ command.

READ,CRn

where:

n = ordinal that identifies which terminal card reader will perform the reading. Default: If the user omits the n value, the system reads cards from CR1. If the user omits the CRn parameter in its entirety, the system assumes the terminal has only one card reader.

HASP multileaving terminals interleave read and print operations. If users want to temporarily suspend printing while reading is being performed, they can take the following actions.

- Issue the following command to temporarily suspend printing.

WAIT,LPn

where:

n = ordinal that identifies the specific terminal printer whose output should be suspended. Default: If the user omits the n value, the system suspends LP1.

- After the WAIT command is sent, the terminal continues card reading without interleaving the print operation.

- Once the terminal completes card reading, the user can resume printing by entering the following command.

GO,LPn

where:

n = ordinal that identifies the specific terminal printer where output should be resumed. Default: If the user omits the n value, the system resumes printing at LP1.

IBM 2780/3780 TERMINALS

Users cannot perform reading and printing concurrently on IBM 2780/3780 terminals. Only one on-line input/output operation can be performed at a time.

HANDLING ERRORS DURING READING

Table 3-2 lists the error messages that a terminal user may receive while a job is being read in to the central system.

TABLE 3-2. ERROR MESSAGES RECEIVED DURING READING

Message	Meaning
CRn,jobname,INPUT FILE ERROR	The system encountered an uncorrectable parity error or terminal hardware error during its read operation. The following replaceable values appear in this message. n = ordinal that identifies the specific card reader at the user's terminal where the job is being read. jobname = the 7-character job name that INTERCOM assigned to the job being read. In this situation, the system performs the following procedure. 1. Ignores subsequent cards being read until it encounters the next end-of-information card. 2. Discards all cards read in as part of the current job. The system does not place this job in its input queue. 3. Assigns the terminal card reader to ERROR status on the H,S display if the user's terminal is an IBM 2780/3780 or HASP multileaving terminal. If the terminal is a Mode 4 terminal, the system assigns the card reader to WAIT/E status. 4. If the user stacked more than one job in the card reader's hopper, the system will not resume its normal reading procedure once it encounters the end of the job affected by the error. The user should reload the entire job affected by the error (and other subsequent jobs stacked in the reader) and reinitiate the read operation.
CRn,NOT READY	Two conditions can initiate this error message. • If the card reader becomes NOT READY because of a card jam or reader malfunction, the message is displayed. • This message also appears if the card reader's hopper is empty and the last card read in was not an end-of-information.

TABLE 3-2. ERROR MESSAGES RECEIVED DURING READING (Contd)

Message	Meaning
	In these instances, the user should correct the malfunction or place more cards in the hopper. (If the hopper was empty and the user does not want to enter more cards as part of the job, he or she should place an end-of-information in the hopper to terminate reading.) Subsequently, the user should make the card reader ready, load the card reader buffer, and enter the following command to resume reading. GO,CRn where: n = ordinal that identifies the card reader whose reading should resume. Default: If the user omits the n value, the system resumes reading from CR1.
INPUT SUSPENDED BY SYSTEM	System has placed the user's terminal card reader in WAIT status because the input queue became overloaded. The system will ignore all user-entered GO and READ commands that reference the terminal card reader. However, it will process all other INTERCOM commands. Once space becomes available in the input queue, the user must enter a READ command to resume reading.
JOB CARD ERROR SKIPPING TO EOF	System detected an erroneous SCOPE 3.4 job card when it read in the user's job. Accordingly, the system performs the following procedures. 1. Ignores all subsequent cards read in until it encounters the next end-of-file/end-of-information card. 2. Discards all cards read in as part of the job with the erroneous job card. The system does not place this job in its input queue. 3. If the user stacked multiple jobs in the card reader's hopper, the procedures performed by the system varies depending on the type of terminal being employed. At IBM 2780/3780 terminals and HASP multileaving terminals, normal reading resumes immediately after the reader encounters the end of the erroneous job (an end-of-file/end-of-information card). Mode 4A terminal users should enter the CONTIN command to resume card reading. The user should correct the erroneous SCOPE 3.4 job card, reload the entire job deck, and reinitiate card reading.

MONITORING CENTRAL SYSTEM PROCESSING 4

Once a job enters the SCOPE 3.4 input queue, the system processes the job exactly as if it had been submitted at the central site. The system assigns a unique 7-character jobname to each job that enters the system. This jobname identifies the job while it resides in the system (in other words, it identifies the job in the input queue, print queue, punch queue, and during execution). Users can follow the progress of jobs submitted under their own login user names by issuing the H command in the following form.

H,q

where:

q = alphabetic character that indicates what kind of status information the user wants to display. Valid entries for the q parameter are:

- I = input queue display; see figure 4-1.
- P = punch queue display; see figure 4-2.
- O = print queue display; see figure 4-3.
- E = display of jobs in execution; see figure 4-4.
- S = display of terminal device status; see figure 4-5.

Table 4-1 describes these displays in detail. In response to the H command, the system transmits an appropriate display to the user's terminal.

TABLE 4-1. H DISPLAYS

Display Type	Function
H, I	Displays all jobs submitted under the user's login user name that currently reside in the system's input queue.
H, E	Displays the status of all jobs submitted under the user's login user name that currently reside in execution. The following message may appear to describe job status.

Message	Meaning
EXECUTING	Job is executing at a control point.
W-DEVICE	Job is waiting for a peripheral device.
W-INTCM	Job is waiting for INTERCOM.
W-MEMORY	Job is waiting for memory.

TABLE 4-1. H DISPLAYS (Contd)

Display Type	Function
H, E (Contd)	

Message	Meaning
W-OPTR	Job is waiting for the central site operator to perform a specific action.
W-PFILE	Job is waiting for a permanent file.
W-SCHED	Job is waiting for the system's scheduler routine to perform a specific action.
W-SWAP	Job is waiting for a swap.

H, O	Displays information about the printed output generated by all jobs submitted under the user's login user name. This display provides information about only the job output that will be printed at the user's terminal.
H, P	Displays information about the punch output generated by all jobs submitted under the user's login user name. This display provides information about only the job output that will be punched at the user's terminal.
H, S	Displays information about each peripheral device that is available at the user's terminal. The system indicates which peripherals are logically on or off and which particular jobs are being handled by specific devices. It also indicates the file size of job output.

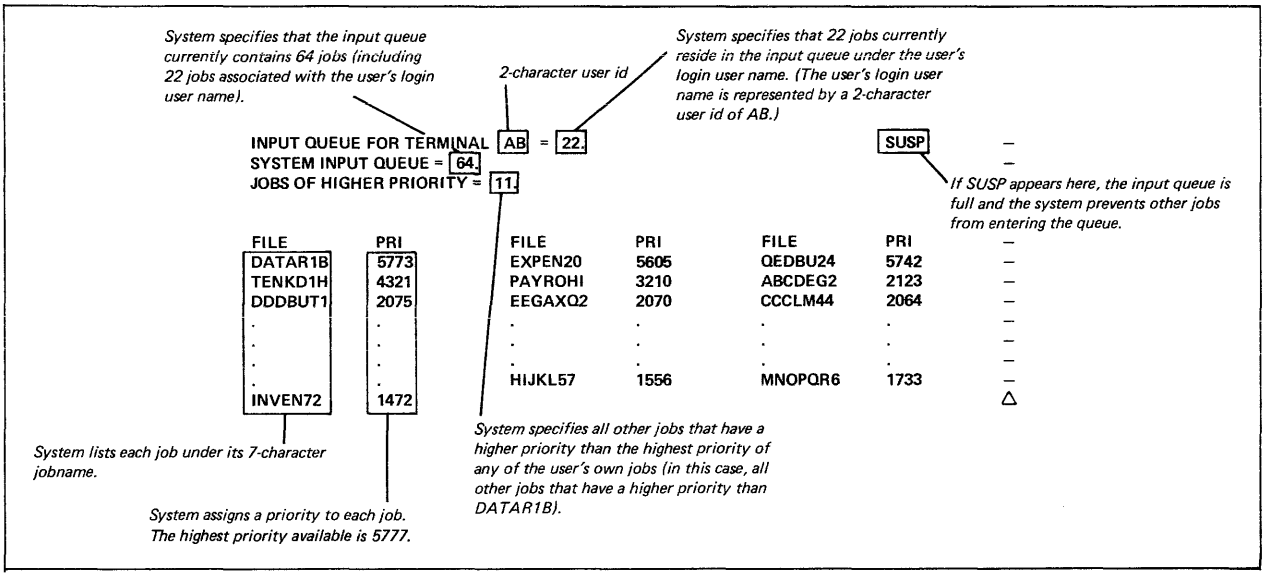


Figure 4-1. Input Queue Display

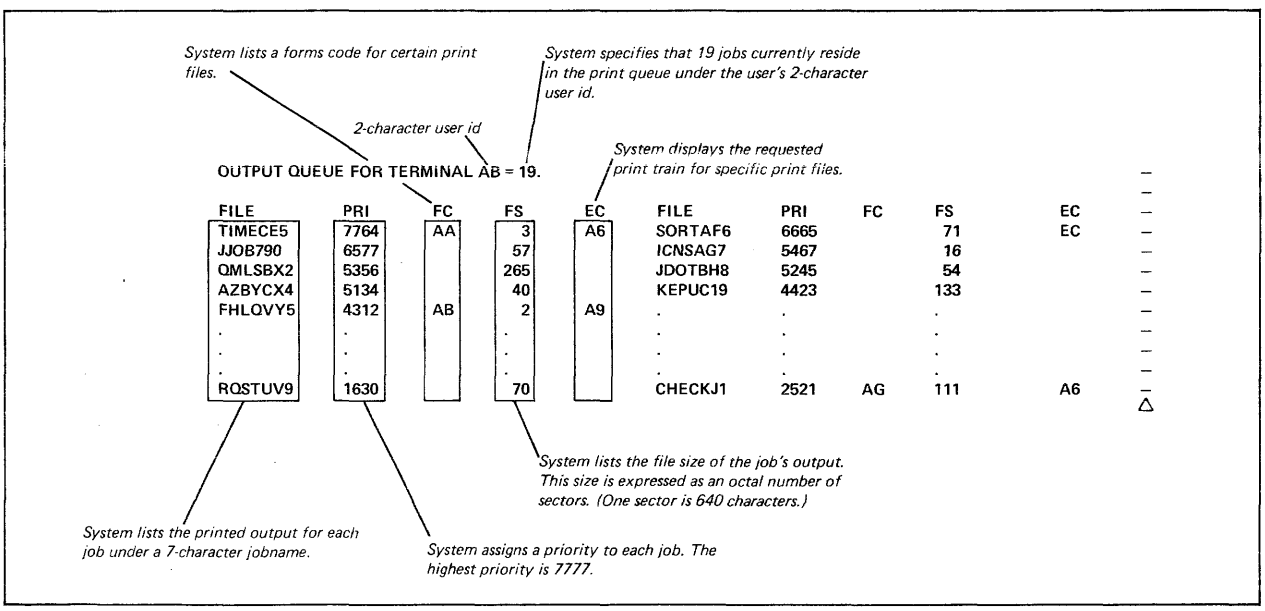


Figure 4-2. Print Queue Display

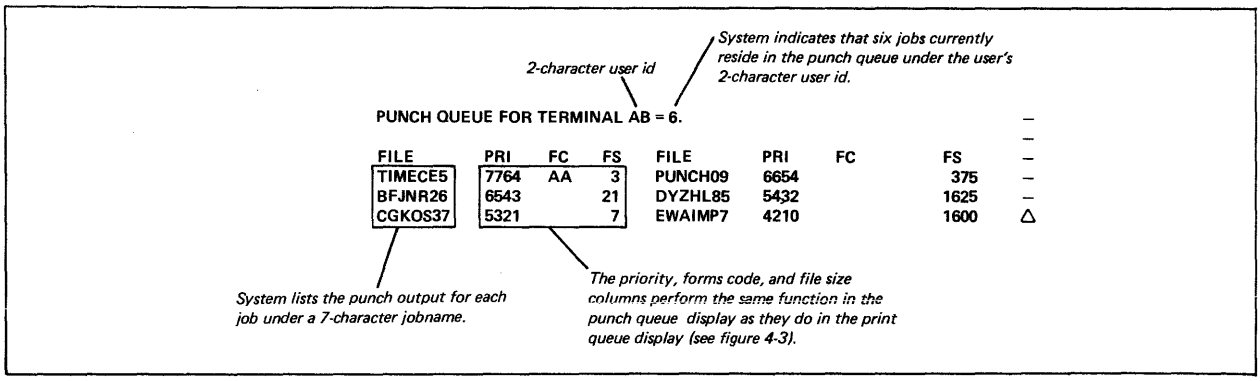


Figure 4-3. Punch Queue Display

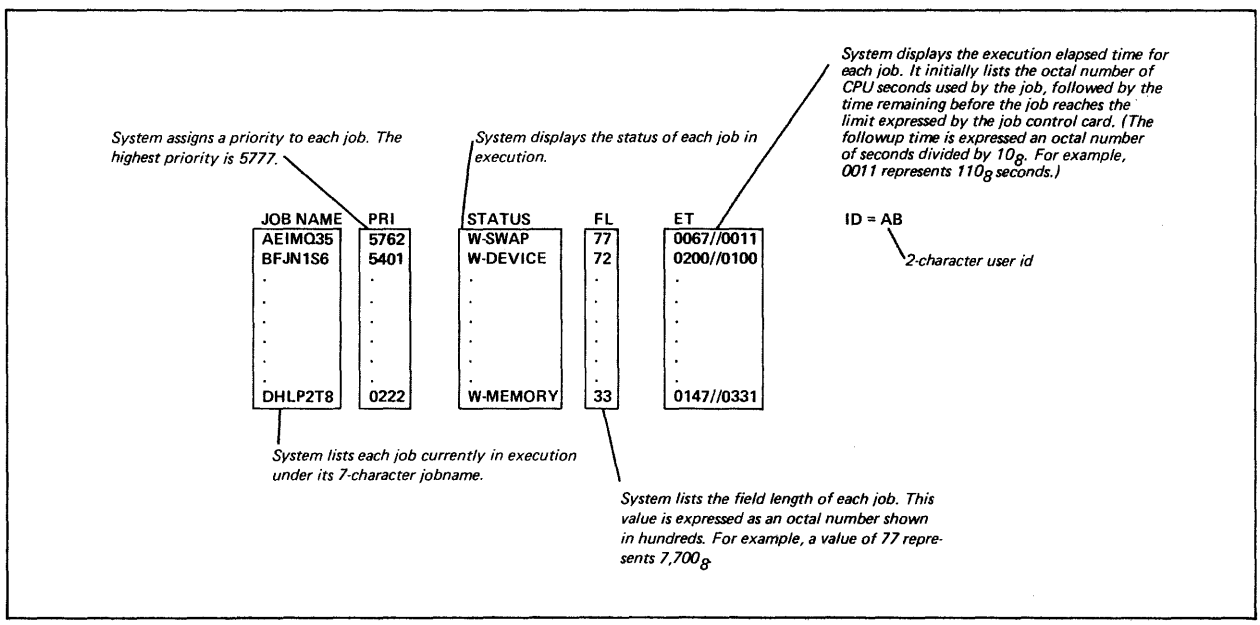


Figure 4-4. Display of Jobs in Execution

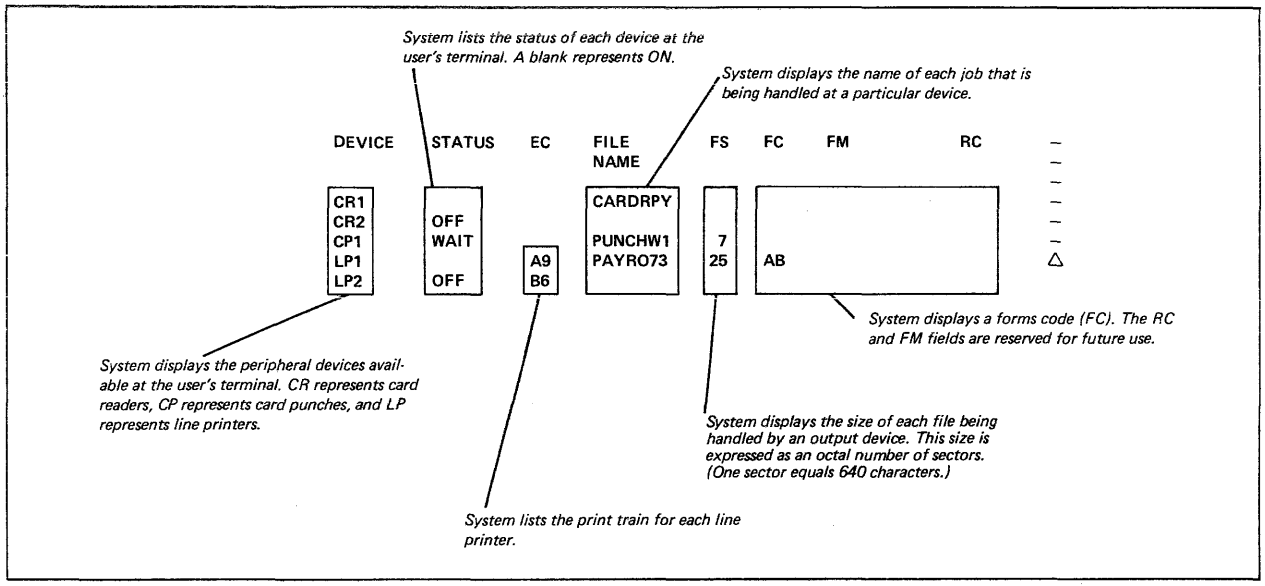


Figure 4-5. Device Status Display

MANIPULATING INPUT/OUTPUT QUEUES 5

When a job enters the system's input queue, SCOPE 3.4 ties the terminal user's login user name to the job. The system continues to associate this user name with the user's job and its output as the system moves the job from the input queue through execution and into the print or punch output queues. As a result, users can log off their terminals once the job enters the input queue and log in later (under the original login user name) to retrieve job output.

Users can manipulate a job and its output by issuing the following INTERCOM queue control commands. These commands rely on the fact that the system ties a job and its output to a user id.

Command	Function
DIVERT	Causes the system to associate the user's job and/or its output with a user name that differs from the job's login user name. As a result, a user other than the job originator can receive job output. One form of the DIVERT command lets the job originator divert output to the central system.
DROP	Drops a job from the system while the job is being executed.
EVICT	Drops a job from the system while the job resides in the input queue or the output queue.
PRIOR	Changes the priority of a job while the job resides in the input queue or the output queue.
REVERT	Reverses the effect of an earlier DIVERT command so that future job output will be tied to the job's login user name instead of the name specified in the DIVERT command.

The following subsections discuss these commands in detail.

DIVERT COMMAND

The DIVERT command instructs the system to associate a job and/or its output with a user name that differs from the job's login user name. As a result, a user other than the job originator can receive job output. In addition, a special form of the DIVERT command lets the user divert output to the central system instead of making it available to a remote batch terminal. Table 5-1 presents the DIVERT command with its various options.

TABLE 5-1. DIVERT OPTIONS

Command	Function
DIVERT,jobname	Diverts output associated with a specified job to the central system. Once the system processes this command, the input and output files associated with the job are no longer tied to the job's login user name. Accordingly, the job originator cannot manipulate these files. Instead, all output will be processed at the central site. The following conventions apply to the jobname parameter. jobname = 7-character jobname that identifies which job should be diverted. The user can abbreviate this jobname to its last 2 characters. Default: If the user omits the jobname parameter, the system diverts all jobs in the input queue, print queue, and punch queue that are associated with the user's user id.
DIVERT,jobname,uname	Diverts all input and output associated with a specified job to a new user name. Once the system processes this command, the input and output files associated with the job are no longer tied to the job's login user name. Instead, they are tied to the newly specified user name. Job output can be recovered only by a terminal user who logs in under the new user name. The system will assign a fixed priority to all diverted output files. The following conventions pertain to the jobname and uname parameters. jobname = 7-character jobname that identifies which job should be diverted. The user can abbreviate this jobname to its last 2 characters. Default: If the user omits the jobname parameter, the system diverts all jobs in the input queue, print queue, and punch queue that are associated with the login user name. Because the jobname parameter is order-dependent, the user must supply a comma to hold its position when omitting the jobname in a DIVERT command. uname = 7-character user name that identifies the new user who will be able to manipulate the diverted job.
DIVERT,jobname,uname,q	Diverts all files that are associated with a specified job and that currently reside in a specific queue to a new user name. Once the system processes this command, the job's files in the specified queue are no longer tied to the job's login user name. However, files in the other queues (those not specified in the command) are still tied to the login user name. The following conventions apply to the jobname, uname, and q parameters. jobname = 7-character jobname that identifies which job should be diverted. The user can abbreviate this jobname to its last 2 characters. Default: If the user omits the jobname parameter, the system diverts all jobs in the specified queue that are associated with the login user name. Because the jobname parameter is order-dependent, the user must supply a comma to hold its position when omitting the jobname from a DIVERT command.

TABLE 5-1. DIVERT OPTIONS (Contd)

Command	Function
	uname = 7-character user name that identifies the new user who will be able to manipulate diverted files. Default: If the user omits the uname parameter, the system diverts the files in the specified queue to the central site. q = queue whose files should be diverted. Valid entries for the q parameter are: I = input queue. O = print queue. P = punch queue.
DIVERT,,uname,q,DEF	Diverts all current and future files in a particular output queue to a new user name. Once the system processes this command, all files that enter the specified queue under the login user name are diverted to the new user name. Users can enter the REVERT command to reverse the effect of this form of the DIVERT command. The following conventions apply to the parameters in this command. uname = 7-character user name that identifies the new user who will be able to log in and retrieve the diverted output. Default: If the user omits the uname parameter, the system diverts all current and future output in the specified queue to the central site. q = queue whose output should be diverted. Valid entries for the q parameter are: O = print queue. P = punch queue. DEF = designation that the system should divert all future output that enters the specified queue under the login user name.

The following examples illustrate the use of the DIVERT command.

Example	Meaning
DIVERT	Diverts all jobs and job output currently in the input queue, print queue, and punch queue from the user's login user name to the central site.
DIVERT,JOBAAAA	Directs all input and output associated with jobname JOBAAAA from the user's login user name to the central site.
DIVERT,JOBAAAA,,O	Diverts the output files that were generated by jobname JOBAAAA and currently reside in the print queue from the user's login user name to the central site.

DIVERT,JOBAAAA,CUST123,O

Diverts the output files that were generated by jobname JOBAAAA and currently reside in the print queue from the user's login user name to a new user name (CUST123).

DIVERT,JOBAAAA,CUST123

Diverts all input and output associated with jobname JOBAAAA from the user's login user name to a new user name (CUST123).

DIVERT,,CUST123

Diverts all jobs and job output currently in the input queue, print queue, and punch queue from the user's login user name to a new user name (CUST123).

DIVERT,,,P

Diverts all output files currently in the punch queue from the user's login user name to the central site.

DIVERT,,CUST123,O,DEF

Diverts all output files currently in the print queue and all output files that will subsequently be generated into the print queue from the user's login user name to a new user name (CUST123).

REVERT COMMAND

The REVERT command reverses the effect of an earlier DIVERT command that contains a DEF parameter. Accordingly, instead of diverting output to a new user name (or the central site), subsequent output will remain associated with a job's login user name. The REVERT command takes the following form.

REVERT,q

where:

q = the queue that should be affected by the REVERT command. Valid entries for the q parameter are:

O = print queue.
P = punch queue.

Consider the following example. A user enters a DIVERT command in the following form to divert all current and future print files from his or her login user name to a new user name (AB1234C).

DIVERT,,AB1234C,O,DEF

To reverse the effect of this command later in the terminal session, the user enters the following REVERT command. Subsequently, print files generated by jobs submitted under the user's login user name will remain associated with that user name.

REVERT,O

DROP COMMAND

The DROP command instructs the system to drop a specified job from execution. Users can drop only those jobs associated with their own user id. If the job being dropped has already generated one or more output files, the system places these files in the user's output queue immediately after processing the DROP command. The DROP command takes the following form.

DROP,jobname

where:

jobname = 7-character jobname that identifies which job should be dropped; mandatory entry. The user can abbreviate this jobname to its last 2 characters.

The following DROP command instructs the system to drop JOBAAAA from execution.

DROP,JOBAAAA
or
DROP,AA

EVICT COMMAND

The EVICT command instructs the system to drop a specified job from the input, print, and/or punch queue. The EVICT command takes the following form.

EVICT,jobname,q

where:

jobname = 7-character job name that identifies which job should be dropped. The user can abbreviate this jobname to its last 2 characters.

q = queue from which the job should be dropped. Default: If the user omits the q parameter, the user drops all files associated with the specified jobname from the input queue, print queue, and punch queue. Valid entries for the q parameter are:

I = input queue.
O = print queue.
P = punch queue.
ALL = all input/output queues.

For example, to drop JOBAAAA from execution and also drop any files generated by JOBAAAA, the user enters:

DROP,JOBAAAA
EVICT,JOBAAAA

To eliminate only the punch files associated with JOBAAAA, the user enters:

EVICT,JOBAAAA,P

PRIOR COMMAND

Users enter the PRIORITY command to change the priority of:

- A specified job that resides in the input queue
- Output from a specified job that resides in the print or punch queues.

The following form of the PRIOR command changes the priority of a job in the input queue.

PRIOR,jobname,p,I

where:

jobname = 7-character jobname that identifies the job whose priority should change. The user can abbreviate this jobname to its last 2 characters.

p = new priority that should be assigned to the job. This 1-digit priority must be one of the valid priority levels that the user can enter on a SCOPE 3.4 job control card. Valid entries are 1, 2, 3, 4, and 5. See the CYBERNET Services SCOPE 3.4 Reference Manual and its discussion of the SCOPE 3.4 job control card for a definition of these priority levels.

I = mandatory entry that specifies that the job resides in the input queue.

The following form of the PRIOR command changes the priority of a job in the print or punch queue.

PRIOR,jobname,pnum,q

where:

jobname = 7-character jobname that identifies the job whose output priority should change. The user can abbreviate this jobname to its last 2 characters.

pnum = 4-digit octal number that will act as the new priority for the output files generated by the specified job. After the system executes a job, it sends output to the print queue and/or punch queue where it gives the output files a specific priority number. Users can determine the priorities of print files by requesting a print queue display with an H,O command. The priorities of punch files are determined by reviewing the punch queue with an H,P command. To change the priorities reflected by the H,O and H,P commands, the user enters a new priority via the pnum parameter in the PRIOR command. The user cannot enter a pnum value that exceeds 7777 (the highest priority available). If the user enters a pnum value in fewer than 4 digits, the system interprets the number right-justified and zero-filled (for example, 101 is equivalent to 0101).

q = queue that should be affected by the priority change. Default: If the user omits the q parameter, the system changes priority of output files in both the print queue and punch queue that were generated by the specified job. Valid entries for the q parameter are:

O = print queue.
P = punch queue.

For example, the following command changes the priority of the print files generated by JOBAAAA to 7773.

```
PRIOR,JOBAAAA,7773,O
```

To change the priority of JOBAAAA to priority 5 in the input queue, enter:

```
PRIOR,JOBAAAA,5,I
```

SENDING AND RECEIVING MESSAGES 6

SENDING MESSAGES

Users can send a message to the central site operator by issuing the MESSAGE command in the following form.

MESSAGE,mmm...m

where:

mmm...m = message that the user wants to transmit. This message can include any alphanumeric character in the INTERCOM character set but cannot exceed 58 characters (embedded blanks are counted in this limit). The system will convert any character having a display code greater than 57 to a blank.† If the message exceeds 58 characters, the system truncates the message to its maximum length.

If the user sends a message while another message is currently being displayed at the central site, the system will not display the newer message. Instead, INTERCOM 5 transmits the following message to the terminal.

CONSOLE BUSY-TRY AGAIN LATER

Once the system displays the transmitted message to the central site operator successfully, it generates the message into the system dayfile. At this point, the terminal user is free to enter any valid INTERCOM command.

RECEIVING MESSAGES

Messages from the central site have priority over all other displays at the user's terminal. On HASP multileaving terminals and Mode 4A terminals, a message from the central site is displayed regardless of what other activity is currently taking place at the terminal.

MODE 4A TERMINALS

A message to a Mode 4A terminal causes card reading and/or line printing to halt temporarily. In order for reading/printing to resume, the Mode 4A user must issue a CONTIN command in the following form.

CONTIN

† See table D-1 to determine which characters have a display code value that is greater than 57.

HASP MULTILEAVING TERMINALS

At HASP multileaving terminals, a message from the central site will not interrupt ongoing card reading, line printing, or punch operations. Instead, the terminal will display the message while reading, printing, and/or punching continues to be performed.

IBM 2780/3780 TERMINALS

On IBM 2780/3780 terminals, the central system will hold a central site message until a current terminal read, print, or punch operation is finished. Once the output operation is complete, the system transmits the message to the terminal line printer.

MESSAGE FORMAT

On all types of terminals, messages from the central site take the following form.

uid,mmm...m

where:

uid = 2-character user id that is associated with the user's login user name.

mmm...m = message from the central site.

HANDLING TERMINAL OUTPUT 7

RULES FOR HANDLING OUTPUT

After the central system executes a user's job, it handles job output in accordance with the conventions listed in table 7-1.

TABLE 7-1. RULES FOR HANDLING JOB OUTPUT

Topic	Rule
Output destinations	Output generated by user jobs can be directed to the following destinations. • Batch terminal logged in under the same user name as the job originator • Batch terminal logged in under a different user name than the job originator • Central site peripherals (line printer or card punch) The destination of job output is controlled by: • Default procedures that return output generated into the SCOPE 3.4 print queue and punch queue to the job originator's batch terminal • ROUTE control statements that appear in the user's job • DIVERT commands issued by the job originator via INTERCOM 5 See "Manipulating Files in Input/Output Queues" in section 5 of this terminal user guide for more information on the INTERCOM 5 DIVERT command. See the CYBERNET Services SCOPE 3.4 Reference Manual for information on the ROUTE statement. The remaining subsections in section 7 of this terminal user guide discuss the default procedures that apply to SCOPE 3.4 and INTERCOM 5 with regard to job output.
Default procedures for handling job output	SCOPE 3.4 makes output that is generated into the print queue and punch queue available to a terminal user who logs in under the same user name as the job originator. The system sends print output to the first available terminal printer that has a print train and forms code to match the print output. A terminal printer is considered to be available if it is logically on and in a ready state.

TABLE 7-1. RULES FOR HANDLING JOB OUPUT (Contd)

Topic	Rule
Default procedures for handling job output (Contd)	Similarly, the system sends punch output to the first available terminal punch that has a forms code to match the punch output. A terminal punch is considered to be available if it is logically on and in a ready state.
Turning printers and punches on and off	The system will not send job output to a terminal peripheral unless the peripheral is logically turned on. By default, terminal printers and punches are logically off. Users must enter the ON command in the following form to turn on an output peripheral. ON,eqo where: eqo = type of equipment the user wants to turn on. Valid entries for the eqo parameter are: LPn = a specific line printer. CPn = a specific card punch. ALL = all peripherals (readers, punches, and printers) configured at the user's terminal. where: n = ordinal that identifies what particular printer or punch should be turned on. Default: If the user omits an n value, the system assumes LP1 or CP1. Default: If the user omits the eqo parameter in its entirety, the system turns on LP1. On Mode 4A terminals, once printing begins, users cannot issue commands or messages from the terminal keyboard without interrupting the print operation. Accordingly, Mode 4A users should not leave the printer logically on when they enter commands/messages and are expecting print output. This precaution is necessary because the keyboard locks immediately after output reaches the terminal and printing begins. Users of HASP multileaving terminals do not need to be concerned with this precaution because their keyboards do not lock while printing, punching, and/or reading is being performed. Users of IBM 2780/3780 terminals should turn their output peripherals logically off when output is expected. This precaution should be observed because users cannot enter commands/messages from the terminal card reader once an output operation begins. To turn a printer or punch logically off, the user enters the OFF command in the following form.

TABLE 7-1. RULES FOR HANDLING JOB OUTPUT (Contd)

Topic	Rule
Turning printers and punches on and off (Contd)	OFF,LPn or OFF,CPn where: n = ordinal that identifies the specific printer or punch that the user wants to turn off. Default: If the user omits the n value, the system assumes LP1 or CP1. If the user issues the OFF command in the following form, the system turns LP1 logically off. OFF To turn off all peripheral equipment configured at the user's terminal (readers, printers, and punches), users enter the following command. OFF,ALL
Configuring terminal peripherals	Before INTERCOM 5 sends print or punch output to a terminal, it must know the operating characteristics of the peripheral device that will receive the output. When a terminal has only one line printer, INTERCOM 5 makes a series of assumptions about this printer by default. However, if a terminal employs more than one line printer or one or more card punches, the terminal user must "configure" these peripheral devices before the system will send output to them. Users configure an output device by issuing a DEFINE command. In addition, if the user wants to alter the system's assumptions about a device (for example, to revise the default characteristics associated with the terminal's only line printer), the user enters a DEFINE command. See the subsection on "Configuring Output Peripherals" in section 7 for more information.
Output format	Print Output. The system generates print output that includes two banner pages which precede the actual output file. These banner pages designate the start of printing and separate consecutive print files. Normally, printing is controlled by carriage control characters that appear as the first character in each print line. However, the terminal user can override these control characters by issuing a SUP command in the following form. SUP,LPn where: n = ordinal that identifies the specific line printer whose printed output should be affected. Default: If the user omits the n value, the system suppresses carriage control for LP1.

TABLE 7-1. RULES FOR HANDLING JOB OUTPUT (Contd)

Topic	Rule
Output format (Contd)	Once the system processes the SUP command, it single spaces the print files. Punch Data. When SCOPE 3.4 generates punch output, the first card of each deck is a laced card containing the file name. This card separates consecutive punch files.
Backspacing output files	Users can backspace a print file or punch file that is currently being printed or punched by entering a BSP command. See the subsection on "Backspacing Output Files" for more information.
Rewinding and returning output files	Users can rewind an output file that is currently being printed or punched and return it to an appropriate output queue by entering the REW command or the RTN command. Both commands terminate printing or punching, rewind the file to its beginning-of-information and return the file to the print queue or punch queue. However, the REW command automatically turns the output device logically off. As a result, the user can either divert the file to another destination (with a DIVERT command) or resume printing at the original output device once the user issues an ON command. The key difference between REW and RTN is that the user can supply a new output priority in the RTN command. See the subsection on "Rewinding and Returning Output Files" for more information
Handling "not ready" conditions	If the system sends an output file to a terminal but an appropriate output device is unavailable (because it is in a "not ready" state), the system sends the following message to the terminal user. LPn, NOT READY or CPn, NOT READY where: n = ordinal that indicates which specific printer or punch is not ready. In response, the user should ready the terminal by taking appropriate action and enter the GO command in the following form. GO,LPn or GO,CPn

TABLE 7-1. RULES FOR HANDLING JOB OUTPUT (Contd)

Topic	Rule
Handling "not ready" conditions (Contd)	where: n = ordinal that indicates which specific printer or punch is now ready. The system will respond by transmitting the output file to the designated peripheral device.
Interrupting printing/ punching	Users of Mode 4A terminals must interrupt terminal printing to enter commands or messages from the terminal keyboard. See the subsection on "Interrupting Printing/ Punching" for more information. Users of HASP multileaving terminals do not need to interrupt terminal printing or punching to enter a command or message. However, if the user wants to interrupt printing or punching for some other reason (for example, to place new paper in the printer), he or she can enter the WAIT command. The user resumes printing or punching by issuing a GO command. See the subsection on "Interrupting Printing/Punching" for more information. Interrupt conventions vary from one type of IBM 2780/3780 terminal to another. Certain IBM 2780/3780 terminals do not allow the user to interrupt an output operation and subsequently resume it from an intermediate position in the output file. (Instead, they can only interrupt printing or punching and resume handling of the entire print or punch file later.) Users should review appropriate terminal operator guides for information on how to interrupt output on specific types of IBM 2780/3780 terminals.
Terminating printing/ punching in progress	To terminate a print or punch operation in progress, users must enter an END,LP or END,CP command. Users of Mode 4 terminals must interrupt printing to unlock their keyboards before issuing this command. Users of HASP multileaving terminals can enter the command without interrupting printing or punching. Users of IBM 2780/3780 terminals must interrupt printing/punching and then enter the END command via the card reader. See the subsection on "Terminating Printing/Punching" for more information on the END command and its format. Once the system processes the END command to terminate printing, it discards the remainder of the print file and prints only the job dayfile. If the user enters a second END command, the system will not print the dayfile. Once the system processes the END command to terminate punching, it terminates punching immediately.

TABLE 7-1. RULES FOR HANDLING JOB OUTPUT (Contd)

Topic	Rule
Normal print/punch termination	The system automatically terminates a print or punch operation when it encounters an end-of-information in the output file.
Errors encountered during printing/punching	See the subsection on "Errors During Printing/Punching" for information about the error messages that the user receives at a terminal if the system encounters an error while printing or punching job output.

CONFIGURING OUTPUT PERIPHERALS

Before the system sends print or punch output to a terminal, it must know the operating characteristics of the peripheral device that will receive the output. When a terminal has only one line printer, the system makes a series of assumptions about this printer by default. In this case, the system designates the lone line printer as LP1 and makes the following default assumptions.

- LP1 does not have special form paper; it has standard paper instead.
- LP1 has the following line width, depending on the type of terminal.

Terminals	Line Width
Mode 4A	136
IBM 2780/3780	128
HASP multileaving	132

- LP1 will print a file identification banner (the jobname) at the beginning of each file of print output.

However, if a terminal employs more than one line printer or one or more card punches, the terminal user must "configure" these peripheral devices before the system will send output to them. Users configure an output device by issuing a DEFINE command. In addition, if the user wants to modify the system's assumptions about a device (for example, to revise the characteristics associated with LP1 by default), the user enters a DEFINE command. (When the user modifies the configuration of a device, the system only alters its assumptions about user-specified parameters. It retains its original assumptions about those characteristics that the user omits from the parameter list.)

If the user issues a DEFINE command while an output file is being printed or punched, the system issues the following message.

COMMAND IGNORED

If the terminal user needs to change print forms or card stock, the user should first turn the output device logically off before entering an appropriate DEFINE command. Output operations will resume when the user turns the device logically on.

If job output requires special handling that is not available through the system's default assumptions and if the user fails to define an output device that can accommodate these special needs, the system simply retains the output until the user makes an appropriate definition. Users can review what special needs are required by specific output files by reviewing the H,O and H,P displays (checking the FC and EC columns in the print queue display and the FC column in the punch queue display). Users can determine what output devices are configured for their terminal by requesting the H,S display.

The DEFINE command takes the following form when it is used to configure an output device.

DEFINE,eqo,p1,p2,...,pn

where:

eqo = code that identifies what output device the user wants to configure. Default: If the user omits the eqo parameter, the system assumes the user wants to configure LP1. Valid entries for the eqo parameter are:

LPn = a specific line printer. On Mode 4A terminals and IBM 2780/3780 terminals, the user can configure only one line printer (LP1). On HASP multileaving terminals, the user can configure up to seven line printers (LP1 through LP7). The n value is the ordinal that identifies the specific line printer being configured.

CPn = a specific card punch. Users of Mode 4A terminals cannot configure any punches. Users of IBM 2780/3780 terminals can configure one card punch (CP1). Users of HASP multileaving terminals can configure up to seven card punches (CP1 through CP7). The n value is the ordinal that identifies the specific punch being configured.

p = one or more optional parameters that define the characteristics of the output device being configured. If the user omits a parameter, the system assumes a default characteristic. Table 7-2 lists the parameters and default characteristics that apply to output peripherals. These parameters are order-independent.

TABLE 7-2. OUTPUT DEVICE CHARACTERISTICS

DEFINE Parameter	Meaning
FCfc	Specifies that the terminal's printer has a specific type of special form paper or that its punch has a special card stock. The following conventions apply to the fc value.

TABLE 7-2. OUTPUT DEVICE CHARACTERISTICS (Contd)

DEFINE Parameter	Meaning
	fc = 2-character forms code that indicates what kind of special paper or cards are available on the output device being configured. Users enter an FC parameter on a ROUTE control statement to indicate that job output requires special paper or cards. The 2-character code associated with the ROUTE statement's FC parameter must match the fc value specified in the DEFINE command's FCfc parameter. See the CYBERNET Services SCOPE 3.4 Reference Manual for more information about the ROUTE command.
banropt	Specifies whether or not the terminal printer will print a file identification banner at the beginning of each file in the print file. The following values are valid entries for the banropt parameter. BANON = printer will print banners. Default: If the user omits a banropt parameter, the system performs the BANON option. BANOFF = printer will suppress banners.
LW=lw	Defines the line width of a terminal printer or card punch in terms of a decimal number of characters. Default: If the user omits the LW=lw parameter, the system makes the following assumptions about line width. Terminal — Default Width Mode 4A — 136 IBM 2780/3780 — 128 HASP multileaving — 132 The following conventions pertain to the lw value. lw = line width of the output device expressed as a decimal number of character positions; lw can have a maximum value of 136 and a minimum value of 80.
punopt	Specifies what punch code is being employed by the terminal card punch. Valid entries for the punopt parameter are: 026 = 026 Hollerith punch code. This code is valid only on IBM 2780/3780 and HASP multileaving terminals. 029 = 029 ASCII punch code. This code is valid only on IBM 2780/3780 and HASP multileaving terminals. Default: If the user omits a punopt parameter, the system assumes 029.

Consider the following situation. The user maintains a HASP multileaving terminal with the following characteristics.

Output Devices	Characteristics
LP1	All default except the printer should suppress print banners
LP2	All default
CP1	All default except the punch employs 026 punch code

In this situation, the user must issue the following DEFINE commands.

```
DEFINE,LP1,BANOFF
DEFINE,LP2
DEFINE,CP1,026
```

If the user had wanted LP1 to print banners, it would not have been necessary to enter a DEFINE command for LP1 because the system automatically defines LP1 with default characteristics.

BACKSPACING OUTPUT FILES

Users can enter the BSP command to backspace a print file or a punch file by a specified number of sectors (under INTERCOM 5, a sector is 64 central memory words). The BSP command takes the following form.

```
BSP,eqo,ss
```

where:

eqo = output device to which the print file or punch file is currently being transmitted. Default: If the user omits the eqo parameter, the system backspaces the file being printed on LP1. Valid entries for the eqo parameter are:

- LPn = a line printer. The n value is the ordinal that identifies a specific line printer at the user's terminal.
- CPn = a card punch. The n value is the ordinal that identifies a specific card punch at the user's terminal.

ss = octal number of sectors multipled by 10_8 that the file should be backspaced. One sector represents 64 central memory words. The ss parameter can have a minimum value of 1 and a maximum value of 777_8. Default: If the user omits the ss parameter, the system backspaces the file by 10_8 sectors.

Consider the following example. A HASP multileaving user decides to backspace the file currently being printed on LP2 by 20_8 sectors. To accomplish this task, the user issues the following commands.

```
WAIT,LP2
BSP,LP2,2
GO,LP2
```

To backspace a file by 100_8 sectors, the user of a Mode 4A terminal enters the following commands.

```
|———— Interrupt procedure
WAIT
BSP,LP1,10
GO——— User can also issue the CONTIN command
```

REWINDING AND RETURNING OUTPUT FILES

Users can rewind an output file that is currently being printed or punched at their terminal and return it to an appropriate output queue by entering either the REW command or the RTN command.

REW COMMAND

The system performs the following actions in response to a REW command: 1) terminates printing or punching at a user-specified output device, 2) rewinds the output file to its beginning-of-information, 3) returns the rewound file to the print or punch queue, and 4) turns the terminal output device logically off. Typically, users issue the REW command when they want to return a file that is currently being printed or punched and direct it to another destination with the DIVERT command. However, if the user issues a REW command and wants to print it from the beginning at the same terminal output device, the user simply issues an ON command to turn on the appropriate device and output will resume.

The REW command takes the following form.

```
REW,eqo
```

where:

eqo = output device where the file is currently being printed or punched. Default: If the user omits the eqo parameter, the system rewinds and returns the file being printed on LP1. Valid entries for the eqo parameter are:

- LPn = a line printer. The n value is the ordinal that identifies a specific line printer at the user's terminal.
- CPn = a card punch. The n value is the ordinal that identifies a specific card punch at the user's terminal.

RTN COMMAND

The RTN command is similar to the REW command except that the user has the option of establishing a new priority for the output file. Accordingly, the system performs the following actions in response to a RTN command: 1) terminates printing or punching at a user-specified output device, 2) rewinds the output file to its beginning-of-information, 3) returns the rewound file to the print or punch queue, and 4) gives a new priority to the returned file.

If the user omits a new priority in the RTN command, the system gives the file its old priority. If the user specifies 0 priority in the RTN command, the system will not transmit the output file until the user resets its priority to a nonzero value with the PRIOR command. This option lets the user handle output files of higher priority while deferring output files that have a zero priority. If the user supplies a new priority other than 0, the system will transmit the rewound output file to the terminal output device according to the new priority criteria.

The RTN command takes the following form.

```
RTN,eqo,pnum
```

where:

eqo = output device where the file is currently being printed or punched. Default: If the user omits the eqo parameter the system rewinds and returns the file being printed on LP1. Valid entries for the eqo parameter are:

- LPn = a line printer. The n value is the ordinal that identifies a specific line printer at the user's terminal.
- CPn = a card punch. The n value is the ordinal that identifies a specific card punch at the user's terminal.

pnum = new priority that the user wants to assign to the output file once it is returned to the print or punch queue. The user can enter any octal priority value 0 through 7777. These values apply to the priorities shown in the print queue display (H,O command) and punch queue display (H,P command). If the user enters a pnum value of 0, the system defers transmitting the zero priority file until the user resets the file to a nonzero priority with the PRIOR command.

Default: If the user omits the pnum parameter, the system gives the output file its original priority.

Consider the following examples. A user wants to stop printing the file currently being printed on LP1 and delay its printing until another output file with a priority greater than 100 has been printed. In this case, the user enters:

```
RTN,,100
```

If a user wants to divert the file currently being printed on LP1 to a central site line printer, the user enters the following commands (assume that the jobname of the print file is JOBAAAA).

```
RTN,0
DIVERT,JOBAAAA,,O
```

INTERRUPTING PRINTING/PUNCHING

COMMAND/MESSAGE ENTRY CONVENTIONS

Mode 4A Terminals

In order to enter a command or message from the terminal keyboard while terminal printing is in progress, users of Mode 4A terminals must first interrupt printing by performing the following procedure. (This procedure is necessary to unlock the terminal keyboard.)

1. Press the interrupt key or its equivalent.
2. Wait for printing to stop and the keyboard to unlock.
3. Clear the display screen (if necessary).
4. Enter the appropriate command or message on the keyboard.
5. In most cases, printing resumes automatically after the user transmits the command. However, if printing does not resume, the user should enter the CONTIN command in the following form.

CONTIN

HASP Multileaving Terminals

Users of HASP multileaving terminals do not need to interrupt terminal printing or punching to enter a command or message. The keyboards on these terminals do not lock while the terminal is handling output on a printer or punch.

IBM 2780/3780 Terminals

Interrupt conventions vary from one type of IBM 2780/3780 terminal to another. Certain IBM 2780/3780 terminals do not allow the user to interrupt an output operation and then resume it from an intermediate position in the output file. In this case, the user can only interrupt the output operation and then reinitiate printing or punching the output file from its beginning-of-information. Users should check the operator manuals published by the terminal manufacturer to determine what specific interrupt conventions apply to their own terminal.

INTERRUPTING FOR OTHER REASONS

Mode 4A Terminals

Users of Mode 4A terminals must always perform the interrupt procedure listed under "Interrupting Printing/Punching (Command/Message Entry Conventions)" in order to interrupt terminal printing for any reason. Once printing halts, the user enters the WAIT command in the following form to make certain that subsequent INTERCOM commands will not resume printing.

WAIT

To resume printing, the user enters the GO command in the following form.

GO

HASP Multileaving Terminals

Users of HASP multileaving terminals can interrupt terminal printing or punching by entering the WAIT command in the following form. (These users do not need to perform any special procedure before issuing the command.)

WAIT,eqo

where:

eqo = output device whose operation should be interrupted. Default: If the user omits the eqo parameter, the system interrupts LP1. Valid entries for the eqo parameter are:

- LPn = a line printer. The n value is the ordinal that identifies a specific printer at the user's terminal.
- CPn = a card punch. The n value is the ordinal that identifies a specific punch at the user's terminal.

Users can resume output transmission to the interrupted device by issuing a GO command in the following form.

GO,eqo

where:

eqo = output device whose operation should resume. Default: If the user omits the eqo parameter, the system interrupts LP1. Valid entries for the eqo parameter are:

- LPn = a line printer. The n value is the ordinal that identifies a specific printer at the user's terminal.
- CPn = a card punch. The n value is the ordinal that identifies a specific punch at the user's terminal.

IBM 2780/3780 Terminals

Interrupt conventions vary from one type of IBM 2780/3780 terminal to another. Accordingly, users of certain IBM 2780/3780 terminals cannot interrupt an output transmission in progress and then subsequently resume the transmission from the position in the output file where the interrupt occurred. Users should review the interrupt procedures documented in the terminal operator manual published for their specific terminal.

TERMINATING PRINTING/PUNCHING

The system automatically terminates terminal printing or punching once it encounters an end-of-information in the output file. To terminate print or punch operations in progress, users enter the END command. Users of Mode 4A terminals must first interrupt printing to unlock their terminal keyboard before they can enter the command. Users of HASP multileaving terminals can enter the command without initiating an interrupt. Users of IBM 2780/3780 terminals must interrupt printing/punching and then issue the END command via the card reader.

The END command takes the following form.

END,eqo

where:

eqo = output device whose operation the user wants to terminate; mandatory entry. Valid entries for the eqo parameter are:

LPn = a line printer. The n value is the ordinal that identifies a specific printer at the user's terminal.

CPn = a card punch. The n value is the ordinal that identifies a specific printer at the user's terminal.

Once the system processes the END command to terminate printing, it discards the remainder of the print file and prints only the job-dayfile. If the user enters a second END command, the system suppresses the dayfile.

Once the system processes the END command to terminate punching, it halts the punch operation immediately.

HANDLING ERRORS DURING PRINTING/PUNCHING

Table 7-3 lists the error messages that a terminal user may receive while job output is being sent to the terminal by INTERCOM 5.

TABLE 7-3. ERROR MESSAGES RECEIVED DURING OUTPUT TRANSMISSION

Message	Meaning
CPn NOT READY	Specified card punch at the user's terminal either: 1) is not yet ready to receive output, or 2) left the ready state during punching (for example, it ran out of cards). In response, the user should ready the card punch and enter a GO command in the following form. GO,CPn
CPn OUTPUT FILE ERROR	System encountered a parity error on the central site mass storage device that contains the output file. In response, the user should attempt to resume output by issuing the following command. GO,CPn If the system retransmits the same error message, the user should perform one of the following actions. • Reposition the output file with a BSP or REW command so that the system will try to send it to the terminal again. • Direct the output file to the central site with a DIVERT command. • Terminate the output operation with an END,CPn command.

TABLE 7-3. ERROR MESSAGES RECEIVED DURING OUTPUT TRANSMISSION (Contd)

Message	Meaning
LPn NOT READY	Specified line printer at the user's terminal either: 1) is not yet ready to receive output, or 2) left the ready state during printing (for example, it ran out of paper). In response, the user should ready the line printer and enter a GO command in the following form. GO,LPn
LPn OUTPUT FILE ERROR	System encountered a parity error on the central site mass storage device that contains the output file. In response, the user should attempt to resume printing by issuing the following command. GO,LPn If the system retransmits the same error message, the user should perform one of the following actions. • Reposition the output file with a BSP or REW command so that the system will try to send it to the terminal again. • Direct the output file to the central site with a DIVERT command. • Terminate the output operation with an END,LPn command.

COMPARING EXPORT 200 AND INTERCOM 5 A

Table A-1 compares the commands available under EXPORT 200 with their counterparts under INTERCOM 5.

TABLE A-1. COMPARISON OF EXPORT 200 AND INTERCOM 5

EXPORT 200 Command	INTERCOM 5 Counterpart	Function
AGAIN	REW and ON,LP	Rewinds an output file and retransmits it to the terminal printer.
AGAIN	BSP	Backspaces an output file to a new position and resumes printing from the new position in the file.
B	H,E	Displays jobs submitted under the user's login user name that are currently at a control point. However, the H,E command will not display the last dayfile message for a job or the input/output time remaining for each job.
CONTINUE	GO	Resumes printing after the temporary suspension of a print operation.
DROP	DROP	Drops a specific job from execution.
DROP	EVICT	Drops the files that are associated with a specific job from the input queue or output queues.
END	END	Terminates card reading or printing in progress.
GO	CONTIN	Resumes an input/output operation that was interrupted by: 1) the reception of a message sent by the central site, or 2) a user-invoked interrupt procedure (pressing the interrupt key at the terminal).
H,I	H,I	Displays jobs submitted under the user's login user name that are currently in the SCOPE 3.4 input queue.
H,O	H,O	Displays jobs submitted under the user's login user name that are currently in the SCOPE 3.4 print queue.
H,R	H,E	Displays jobs submitted under the user's login user name that are currently in execution.
IMPORT	LOGIN	Logs in the terminal to a SCOPE 3.4 system. INTERCOM 5 does not require users to include a SUS parameter (or a counterpart) to turn an output device logically off. Under INTERCOM 5, terminal printers are logically off by default. (The user must issue an ON command to turn on a line printer.)

TABLE A-1. COMPARISON OF EXPORT 200 and INTERCOM 5 (Contd)

EXPORT 200 Command	INTERCOM 5 Counterpart	Function
LOGOUT	LOGOUT	Logs off the terminal from the central system.
MESSAGE	MESSAGE	Transmits a message to the central site operator. Under EXPORT 200, messages can contain up to 28 characters. Under INTERCOM 5, messages can consist of up to 58 characters.
OUTPUT	DIVERT	Directs the printed output from a specified job to a central system line printer.
OUTPUT	DIVERT	Directs the printed output from a specified job to another login user name.
PRIORITY	PRIOR	Changes the priority of a specified output file. Users enter a 4-character priority value that has meaning in the print queue.
PRIORITY	PRIOR	Changes the priority of a specified file in the input queue. Users enter a 1-character priority that relates to the SCOPE 3.4 job card.
READ	READ	Begins a card reading operation so that a job can be submitted to the SCOPE 3.4 input queue.
SUSPEND	WAIT	Temporarily suspends a print operation in progress.

COMPARING COPE 65 HASP AND INTERCOM 5 B

Table B-1 compares the commands available under COPE 65 HASP multileaving with their counterparts under INTERCOM 5.

TABLE B-1. COMPARISON OF COPE HASP AND INTERCOM 5

Multileaving Command	INTERCOM 5 Counterpart	Function
/*SIGNON	LOGIN	Logs in the terminal to a SCOPE 3.4 system.
/*SIGNOFF	LOGOUT	Logs off the terminal from the central system. However, /*SIGNOFF actually drops the communications link between the terminal and the system.
0(zero)	MESSAGE	Transmits a message to the central site operator. Under COPE HASP, messages can consist of up to 120 characters. Under INTERCOM 5, messages can have a maximum of 58 characters.
429IN	DEFINE	Specifies that card reader input employs the 029 punch code.
426IN	DEFINE	Specifies that card reader input employs the 026 punch code.
4TF	END	Terminates card reading, printing, or punching in progress.
4LOCK	OFF	Inhibits output transmission. 4LOCK locks all output files. OFF turns individual output devices logically off.
4OPEN	ON	Facilitates output transmission. 4OPEN unlocks all output files. ON turns individual output devices logically on.
1FORM,xx	DEFINE	Changes the forms code for an output device.
1FORM	H,S	Displays the forms code available on an output device.
4ST	GO	Resumes printing after a forms change.
4RW	REW	Rewinds an output file to its beginning-of-information.
1SKP	No equivalent	Advances a print file to a new position.
4BS	BSP	Backspaces an output file to a new position.

TABLE B-1. COMPARISON OF COPE HASP AND INTERCOM 5 (Contd)

Multileaving Command	INTERCOM 5 Counterpart	Function
1ABT	DROP and EVICT	Drops jobs from execution and evicts jobs from the input/output queues.
1CPR	PRIOR	Changes the priority of specified files in the system's input/output queues.
1DVT	DIVERT	Diverts output files to the central site or another user.
1L	H	Displays jobs that have been submitted to the system.
1QUIT	No equivalent	Terminates the list of jobs being displayed. Under COPE HASP, the user enters the 1 QUIT command to terminate the display. Under INTERCOM 5, the entry of any other INTERCOM command terminates the display.

In addition to the differences in commands, INTERCOM 5 and COPE HASP employ different conventions with regard to designating end-of-record and end-of-job/end-of-information.

COPE HASP	INTERCOM 5
/*EOR card	7/8/9 card or /*EOR card
/*EOJ card	6/7/8/9 card† or /*EOI card or /*EOS card††

†The 6/7/8/9 card is not valid when entered at a HASP multileaving or IBM 2780/3780 terminal.

††A /*EOS card acts like a /*EOI card except that it terminates the input stream in addition to terminating a job.

CARRIAGE CONTROL CHARACTERS C

Remote batch terminals employ carriage control characters to control the spacing of job output that is printed at a terminal line printer. Output to a terminal line printer is treated in the same way as output to a central site line printer: the first character position of an output line is considered to be the carriage control position. In other words, INTERCOM 5 uses the character in column 1 to control the spacing of printed output. Table C-1 indicates the functions of various characters when INTERCOM 5 treats them as carriage control characters.

INTERCOM 5 performs a special procedure when columns 1 and 2 in an output file contain the characters P and M respectively. In this case, the terminal printer will not print the designated line of output. Instead, INTERCOM 5 sends the characters PM and the first 30 characters following the PM carriage control to the terminal display screen. Then, INTERCOM 5 places the terminal line printer in WAIT status until the terminal operator issues the GO command or CONTIN command† to acknowledge the message. This print message feature applies to Mode 4A, IBM 2780/3780, and HASP multileaving terminals. (However at Mode 4A terminals, if card reading is being performed when the PM message is displayed, card reading is interrupted. Reading resumes automatically after 1 minute. The printer remains in WAIT status.)

TABLE C-1. REMOTE BATCH CARRIAGE CONTROLS

INTERCOM 5 Carriage Control Character	Mode 4A		IBM 3780		HASP		IBM 2780	
	Before Print	After Print	Before Print	After Print	Before Print	After Print	Before Print	After Print
1	New page	No space	New page	No space	New page	No space	New page	Space 1
+	No space	No space	No space	No space	No space	No space	No space	Space 1
0	Space 2	No space	Space 2	No space	Space 2	No space	Space 1	Space 1
-	Space 3	No space	Space 3	No space	Space 3	No space	Space 2	Space 1
All others, including blanks	Space 1	No space	Space 1	No space	Space 1	No space	No space	Space 1

†The CONTIN command applies to Mode 4A terminals only.

CHARACTER SETS D

Appendix D discusses the character set conventions that apply to remote batch processing under INTERCOM 5. SCOPE 3.4 employs a character set that consists of 64 display codes. Figure D-1 illustrates the relationships between the SCOPE 3.4 character set and the steps in batch terminal communications that pertain to INTERCOM 5. Table D-1 presents the standard SCOPE 3.4 character set and its relationship to the elements of INTERCOM 5 processing.

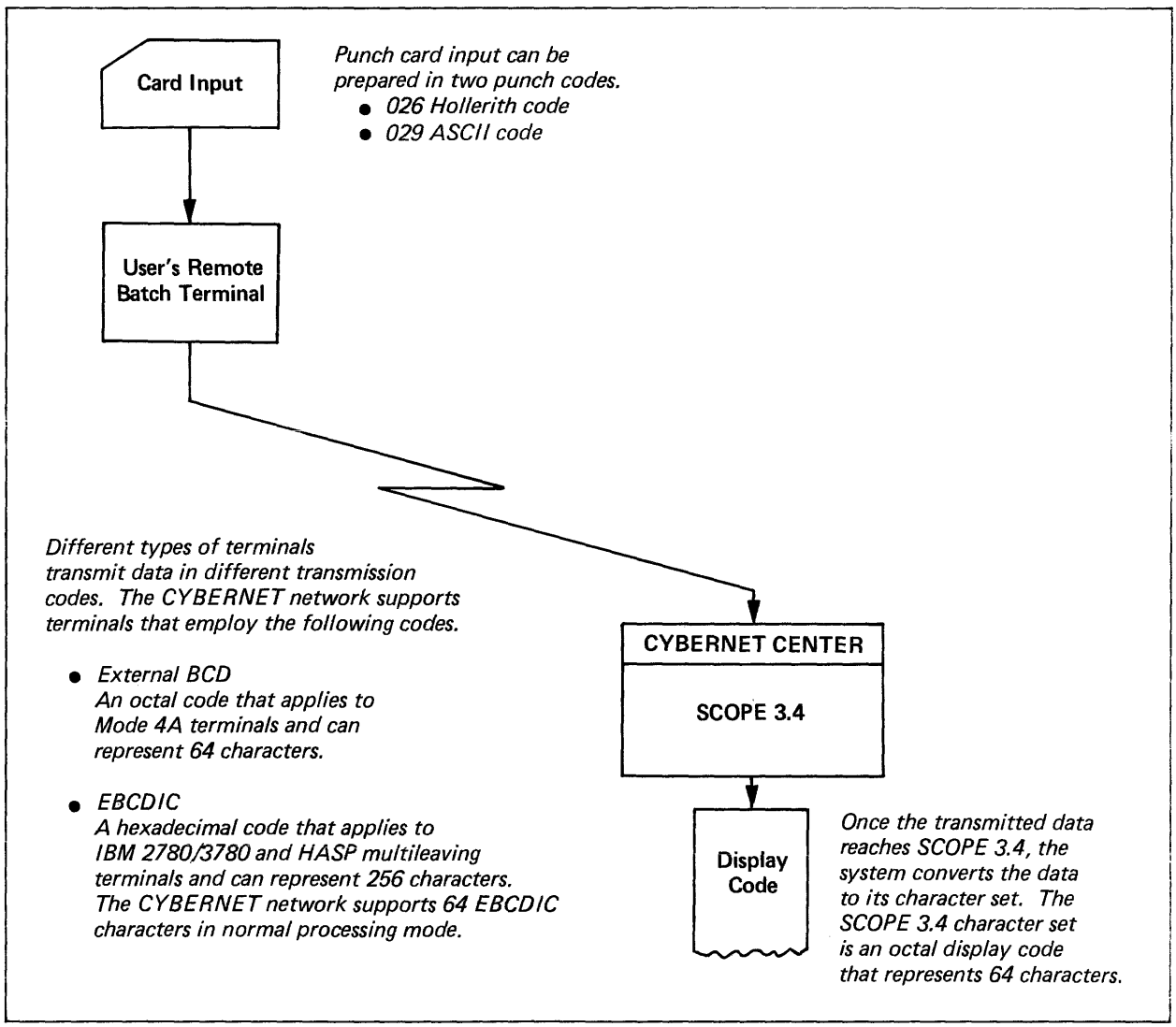


Figure D-1. Character Set Concepts

TABLE D-1. SCOPE 3.4 CHARACTER SET AND ELEMENTS OF INTERCOM 5 PROCESSING

Graphic Input		Punch Card Code		Transmission Codes		SCOPE 3.4 Display Code (Octal Value)
CDC Graphic	ASCII Graphic	026	029	External BCD (Octal Value)	EBCDIC (Hexadecimal Value)	
:	:	8-2	8-2	00	7A	00
A	A	12-1	12-1	61	C1	01
B	B	12-2	12-2	62	C2	02
C	C	12-3	12-3	63	C3	03
D	D	12-4	12-4	64	C4	04
E	E	12-5	12-5	65	C5	05
F	F	12-6	12-6	66	C6	06
G	G	12-7	12-7	67	C7	07
H	H	12-8	12-8	70	C8	10
I	I	12-9	12-9	71	C9	11
J	J	11-1	11-1	41	D1	12
K	K	11-2	11-2	42	D2	13
L	L	11-3	11-3	43	D3	14
M	M	11-4	11-4	44	D4	15
N	N	11-5	11-5	45	D5	16
O	O	11-6	11-6	46	D6	17
P	P	11-7	11-7	47	D7	20
Q	Q	11-8	11-8	50	D8	21
R	R	11-9	11-9	51	D9	22
S	S	0-2	0-2	22	E2	23
T	T	0-3	0-3	23	E3	24
U	U	0-4	0-4	24	E4	25
V	V	0-5	0-5	25	E5	26
W	W	0-6	0-6	26	E6	27
X	X	0-7	0-7	27	E7	30
Y	Y	0-8	0-8	30	E8	31
Z	Z	0-9	0-9	31	E9	32
0	0	0	0	12	F0	33
1	1	1	1	01	F1	34
2	2	2	2	02	F2	35
3	3	3	3	03	F3	36
4	4	4	4	04	F4	37
5	5	5	5	05	F5	40
6	6	6	6	06	F6	41
7	7	7	7	07	F7	42
8	8	8	8	10	F8	43
9	9	9	9	11	F9	44
+	+	12	12-8-6	60	4E	45
-	-	11	11	40	60	46
*	*	11-8-4	11-8-4	54	5C	47
/	/	0-1	0-1	21	61	50
(	(	0-8-4	12-8-5	34	4D	51
)	)	12-8-4	11-8-5	74	5D	52
$	$	11-8-3	11-8-3	53	5B	53
=	=	8-3	8-6	13	7E	54
blank	blank	no punch	no punch	20	40	55
,	,	0-8-3	0-8-3	33	6B	56
.	.	12-8-3	12-8-3	73	4B	57
≡	#	0-8-6	8-3	36	7B	60
[	[	8-7	12-8-2	17	4A	61
]	]	0-8-2	11-8-2	32	5A	62
%	%	8-6	0-8-4	16	6C	63
≠	"	8-4	8-7	14	7F	64
→	_	0-8-5	0-8-5	35	6D	65
∨	!	11-8-2	12-8-7	52	5A	66
∧	&	0-8-7	12	37	50	67
↑	'	11-8-5	8-5	55	7D	70
↓	?	11-8-6	0-8-7	56	6F	71
<	<	12-8-2	12-8-4	72	4C	72
>	>	11-8-7	0-8-6	57	6E	73
≤	@	8-5	8-4	15	7C	74
≥	\	12-8-5	0-8-2	75	E0	75
¬	^	12-8-6	11-8-7	76	5F	76
;	;	12-8-7	11-8-6	77	5E	77

INDEX

Abbreviating Commands 2-5
Automatic Terminal Disconnect 2-7

Backspacing Output Files 7-9, 7-10
BCD (see "External BCD")
Binary Cards 3-1
BISYNC Line Control Protocol 1-1
BLOCK Command 1-2, 2-7
BSP Command 1-2, 7-9, 7-10
Buffer Size 2-7
Bulletins 2-2, 2-3

Card Punching
  Backspacing punch files 7-9
  Configuring terminal card punches 7-3, 7-6 to 7-9
  Default procedures for punch output 7-2
  Device status display 4-2, 4-5
  Errors related to punch output 7-14, 7-15
  Interrupting punch operations 7-12, 7-13
  Number of terminal punches supported 1-1
  Punch output format 7-4
  Punch queue display 4-2, 4-4
  Rewinding/returning punch files 7-10, 7-11
  Selecting punch codes 7-8
  Special card stock 7-7, 7-8
  Terminating punch operations 7-13, 7-14
  Turning punches on/off 7-2, 7-3
Card Reading
  Command entry during read operations 3-7, 3-8
  Configuring terminal card readers 3-2, 3-4, 3-5
  Device status display 4-2, 4-5
  Errors related to read operations 3-11, 3-12
  Initiating read operations 3-2, 3-6
  Initiating reading with printing in progress 3-9, 3-10
  Interrupting read operations 3-3, 3-7 to 3-9
  Normal termination of read operations 3-4
  Not ready conditions 3-11
  Number of terminal readers supported 1-1
  Terminating reading in progress 3-3, 3-4
  Turning readers on/off 3-2
Carriage Control Characters C-1
  Suppressing carriage controls 7-3
CDC CYBER 18 Remote Batch Terminal 1-1
CDC Mode 4A Protocol 1-1
  Also see "Mode 4A Terminals"
~~CDC 200 User Terminal 1-1, 3-4~~
CDC 734 Remote Batch Terminal 1-1, 2-6
Central Site Messages 6-1, 6-2
  From central site 6-1, 6-2
  To central site 6-1
Central Site Output Disposition 5-2
Character Set Conventions D-1, D-2
  SCOPE 3.4 character set D-2
Column Binary Cards 3-1
Commands (INTERCOM 5)
  Abbreviating commands 2-5
  Command entry conventions 2-4 to 2-6
  Command entry with reading in progress 3-7, 3-8
  Command entry with output in progress 7-12
  Command length 2-6
  Command terminators 2-5
  Default parameters 2-5
  Erroneous commands 2-5, 2-6
  List of all INTERCOM commands 1-2, 1-3
  Order-dependent parameters 2-5
  Parameter separators 2-5
  Transmitting commands 2-4, 2-5
Communication Protocols 1-1
Configuring Terminals
  Configuring card punches 7-6 to 7-9
  Configuring card readers 3-2, 3-4, 3-5
  Configuring line printers 7-6 to 7-9
  Limits on terminal devices 1-1
Connect Time 2-8
CONTIN Command 1-2, 3-7, 6-1, 7-12
COPE HASP
  Comparison with INTERCOM 5 B-1, B-2
COPE Terminals 1-1

DATA 100 Models 74/76/78 1-1
DEFINE Command 1-2
  Configuring card punches 7-6 to 7-9
  Configuring card readers 3-4, 3-5
  Configuring line printers 7-6 to 7-9
Diagnostics (INTERCOM 5)
  During card reading 3-11, 3-12
  During login 2-3
  During output operations 7-14, 7-15
  Forced logout 2-7
  Unrecognizable commands 2-5
  While sending messages to central site 6-1
Disconnect 2-7, 2-8
Display Screen Adjustment 2-6
Displays
  Device status display 4-2, 4-5
  ~~H displays 4-1 to 4-5~~
  Input queue display 4-1, 4-3

Jobs in execution 4-1, 4-2, 4-4
Print queue display 4-2, 4-3
Punch queue display 4-2, 4-4
DIVERT Command 1-2, 5-1 to 5-4
Reversing the DEF parameter 5-4
Diverting Job Output 5-1 to 5-4
DROP Command 1-2, 5-5
Dropping Jobs
During execution (DROP command) 5-5
Input/output queues (EVICT command) 5-5

EBCDIC Transmission Code D-1, D-2
END Command 1-2
Card punching 7-13, 7-14
Card reading 3-3, 3-4
Line printing 7-13, 7-14
End-Of-File Indicators 3-1
End-Of-Information Indicators 3-1, 3-6, 3-7
End-Of-Record Indicators 3-1
End-Of-Stream (/*EOS Card) 3-1, 3-7
Error Messages (see "Diagnostics")
EVICT Command 1-2, 5-5
Execution (Job Execution)
Displaying jobs in execution 4-1, 4-2, 4-4
Dropping jobs in execution 5-5
Submitting jobs for execution 3-1 to 3-12
EXPORT 200
Comparison with INTERCOM 5 A-1, A-2
External BCD Transmission Code D-1, D-2

Forced Logout 2-7

GO Command 1-3
Card punch operations 7-12, 7-13
Card reader operations 3-8
Line printer operations 7-12, 7-13

H Command 1-3, 4-1, 4-2
Harris COPE Models 1200/1600 1-1
HASP Control Language 1-1
Comparison with INTERCOM 5 B-1, B-2
HASP Multileaving Terminals 1-1 (def)
Command entry conventions 2-4
Command entry during card reader operations 3-8
Command entry during output operations 7-12
Configuring card readers 3-2, 3-4, 3-5
Configuring output devices 7-6 to 7-9
Display screen formats 2-6
Handling empty card hoppers 3-7
Initiating card reading with printing in progress 3-10
Input/output device limitations 1-1
Interrupting card reader operations 3-7 to 3-9
Interrupting output operations 7-12, 7-13
Job deck conventions 3-1
Receiving messages from central site 6-2
IBM HASP Multileaving Protocol 1-1
Also see "HASP Multileaving Terminals"
IBM 2780/3780 Terminals 1-1 (def)
Command entry conventions 2-4
Command entry during output operations 7-12
Command entry with card reading in progress 3-8
Configuring card readers 3-2, 3-5
Configuring output devices 7-6 to 7-9
Display screen formats 2-6
Handling empty card hoppers 3-7
Initiating card reading with printing in progress 3-10
Input/output device limitations 1-1
Interrupting output operations 7-12, 7-13
Job deck conventions 3-1
Receiving messages from central site 6-2
Initiating Card Reading 3-2, 3-6, 3-7
With output in progress 3-9, 3-10
Initiating Output Operations 7-1, 7-2
Input for Processing under SCOPE 3.4 (See "Card Reading")
Input Queue
Displaying input queue 4-1, 4-3
Overloaded input queue 3-7, 3-12
Submitting jobs to input queue 3-6, 3-7
Interrupting Card Reading 3-3, 3-7 to 3-9
Interrupting Output Operations 7-12, 7-13

Job Card Error 3-12
Job Decks
Formats 3-1
Reading in job decks 3-6, 3-7
Jobname 4-1 (def)

Line Printing
Banner print heads 7-8
Backspacing print files 7-9, 7-10
Carriage control characters C-1, 7-3
Configuring terminal line printers 7-3, 7-6 to 7-9
Default procedures for print output 7-1
Device status display 4-2, 4-5
Errors related to print operations 7-14, 7-15
Interrupting print operations 7-5, 7-12, 7-13
Line wide controls 7-8
Number of terminal printers supported 1-1
Print output format 7-3
Print queue display 4-2, 4-3
Rewinding/returning print files 7-4, 7-10, 7-11
Special forms paper 7-7, 7-8
Suppressing carriage control characters 7-3
Terminating print operations 7-5, 7-13, 7-14
Turning printers on/off 7-2, 7-3
LOGIN Command 1-3, 2-2
Login Procedures 2-1 to 2-4
Diagnostics during login 2-3

Example 2-4
Message 2-2, 2-3
LOGOUT Command 1-3, 2-8
Forced logout 2-7
Logout messages 2-8

MESSAGE Command 1-3, 6-1
Messages 6-1, 6-2
From central site 6-1, 6-2
To central site 6-2
Mode 4A Terminals 1-1 (def)
Command entry conventions 2-4
Command entry with card reading in progress 3-7
Command entry with printing in progress 7-12
Configuring card readers 3-2, 3-5
Configuring output devices 7-6 to 7-9
Display screen formats 2-6
Handling empty card hoppers 3-7
Initiating card reading with printing in progress 3-9, 3-10
Input/output device limitations 1-1
Interrupting card reading 3-7, 3-8
Interrupting printing in progress 7-12
Multiplexer Identifier 2-2, 2-3
MUX Identifier 2-3

OFF Command 1-3
Card readers 3-2
Output devices 7-2, 7-3
ON Command 3-2
Card readers 3-2
Output devices 7-2
Output Operations
Backspacing output files 7-9, 7-10
Changing priority of output files 5-6, 5-7
Configuring output devices 7-6 to 7-9
Controlling output disposition 7-1
Default procedures for handling job output 7-1, 7-2
Diverting output files 5-1 to 5-4
Dropping job output 5-5
Errors related to output handling 7-14, 7-15
Interrupting output operations 7-12, 7-13
Reversing diverted jobs 5-4
Rewinding/returning output files 7-10, 7-11
Rules for handling job output 7-1 to 7-6
Terminating output operations 7-13, 7-14
Turning output devices on/off 7-2, 7-3
Also see "Card Punching," "Line Printing," "Print Queue" and "Punch Queue"

Parameter Separators (INTERCOM commands) 2-5
Passwords 2-2
Part Identifier 2-2, 2-3
Print Operations (see "Line Printing")

Print Queue 4-1, 4-2
Changing job priority 5-6, 5-7
Displaying print queue 4-3
Diverting print output 5-1 to 5-4
Dropping print output 5-5
PRIOR Command 1-3, 5-6, 5-7
Priority
Changing priority of jobs in input/output queues 5-6
Resetting priority after returning file to output queue 7-11
Protocols 1-1
Punch Operations (see "Card Punching")
Punch Queue
Changing job priority 5-6, 5-7
Displaying punch queue 4-4
Diverting punch output 5-1 to 5-4
Dropping punch output 5-5

READ Command 1-3, 3-6
Read Operations (see "Card Reading")
Returning Files to Output Queues 7-9, 7-10
REVERT Command 1-3, 5-4
REW Command 1-3, 7-9
Rewinding Output Files 7-9, 7-10
RTN Command 1-3, 7-9, 7-10

SBUs 2-8
SCOPE 3.4 Control Statements 3-1
SCOPE 3.4 Display Code D-1, D-2
SCREEN Command 1-3, 2-6
Separators (in INTERCOM Commands) 2-5
Submitting Jobs 3-1 to 3-12
Configuring terminal card readers 3-4, 3-5
Interrupting read operations 3-7 to 3-9
Reading in jobs 3-6, 3-7
Rules for submitting jobs 3-1 to 3-4
SUP Command 1-3, 7-3
Suspending Input/Output Operations (see "Interrupting Card Reading" and "Interrupting Output Operations")
System Bulletins 2-2, 2-3

Terminal Operations
Adjusting display screen 2-6
Automatic terminal disconnect 2-7
Disconnect recovery 2-7, 2-8
Handling terminal output 7-1 to 7-15
Login procedures 2-1 to 2-4
Logging off 2-8
Selecting block transmission size 2-7
Sending commands 2-4, 2-5
Sending messages 6-2
Also see "HASP Multileaving Terminals," "IBM 2780/3780 Terminals," and "Mode 4A Terminals"
Terminating Card Reading 3-3
Terminating Output Operations 7-13, 7-14
Terminators (INTERCOM Commands) 2-5

TIO Characters 2-8
Transmission Block Size 2-7

User Id (UID) 2-3, 6-2
User Name 2-2, 5-1

WAIT Command 1-3
  Card punching 7-12, 7-13
  Card reading 3-8
  Line printing 7-12, 7-13

COMMENT SHEET

MANUAL TITLE CYBERNET Services INTERCOM 5 Terminal User Guide

PUBLICATION NO. 84000650 REVISION A

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