IBM VSE/Enterprise Systems Architecture
VSE Central Functions

VSE/POWER Remote Job Entry

Version 6 Release 4

SC33-6734-00

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Note!

Before using this information and the product it supports, be sure to read the general information under“Notices” on page ix.

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About This Book

This book describes Remote Job Entry for VSE/POWER.

Who Should Use This Book

This manual is for users who plan and prepare jobs for remote terminals, as well as for system and terminal operators. The intended audience consists therefore of users who have hardware knowledge of the various RJE terminals.

How to Use This Book

The following list tells where you find information on various aspects of VSE/POWER described in this manual:

- Chapter 1, “Introduction” on page 1 provides an overview of the RJE function.
- Chapter 2, “Remote Operating Procedures” on page 5 describes RJE operations and shows how you can improve operations at a terminal. For every terminal supported by the RJE function, this chapter describes the actions required to perform input and output operations, the handling of special forms, and the procedures to overcome error conditions.
- Chapter 3, “Terminal Operator Commands” on page 57 lists and references the VSE/POWER terminal operator commands. You can use these commands to start, control, interrupt, and terminate sessions and VSE/POWER tasks, to inspect and manipulate VSE/POWER queues, and to communicate with the central operator or other terminal users.

The following information is included in the appendixes:

- Appendix A, “LOGON Mode Table and VTAM BIND Parameter Requirements” on page 111 describes the VTAM BIND parameters required for the VSE/POWER RJE,SNA support.
- Appendix B, “VTAM Sense Data” on page 113 describes the VTAM sense data required for the VSE/POWER RJE,SNA support.
- Appendix C, “RJE,SNA I/O Specifications” on page 115 describes the major functions of VSE/POWER RJE,SNA with respect to the handling of input and output information.
- Appendix D, “RJE,BSC Telecommunication Trace” on page 123 describes the RJE,BSC trace facility and the trace record format.

Additional help is provided at the back of the book:

- The glossary explains technical terms.
- The index helps you to locate information.

Where to Find More Information

The following IBM manuals also contain information pertinent to VSE/POWER:

- *VSE/POWER Administration and Operation*, SC33-6733
- *VSE/POWER Networking*, SC33-6735
- *VSE/POWER Application Programming*, SC33-6736

The VSE/POWER messages are listed in *VSE/ESA Messages and Codes*, SC33-6796, SC33-6798, and SC33-6799.

For VSE/ESA, you may occasionally need the following IBM manuals:

- *VSE/ESA Installation*, SC33-6704
- *VSE/ESA Operation*, SC33-6706
- *VSE/ESA Guide to System Functions*, SC33-6711
- *VSE/ESA System Control Statements*, SC33-6713

For VTAM, these IBM manuals may be helpful:

- *VTAM Network Implementation Guide*, SC31-6494
- *VTAM Operation*, SC31-6495
- *VTAM Resource Definition Reference*, SC31-6498
- *Planning for NetView, NCP, and VTAM*, SC31-7122

On individual devices, you may have to consult the following IBM books:

- *System Components: IBM 2770 Data Communication System*, GA27-3013
- *Component Description: IBM 2780 Data Transmission Terminal* GA27-3005
- *IBM 3741 Data Station Operator's Guide*, GA21-9131
- *IBM 3741 Data Station Reference Manual*, GA21-9183
- *IBM 3770 Data Communication System, System Components*, GA27-3097
- *Operating Procedures Guide, IBM 3771 and 3773 Communications, Terminals*, GA27-3100
- *IBM 3773, 3774, and 3775 Programmable Communication Terminals Operator's Guide*, GA27-3114
- *Operating Procedures Guide:*
  IBM 3774 and 3775 Communication Terminals, GA27-3094
- *Operating Procedures Guide: IBM 3776 and Communication Terminal*, GA27-3107
- *Component Information for the IBM 3780 Data Communication Terminal*, GA27-3063
- *Operations Guide for the IBM 3790 Communication System* GA27-2822
- *IBM 3790 Communication System:*
  Operator's Guide for the IBM 3793 Keyboard Printer, GA27-2824
- *IBM 3790 Communication System: Operator's Guide for the IBM 3277 Display Station*, GA27-2825
- *IBM 3790 Communication System, Host System Programmer's Guide* GC22-9051

VSE/ESA Home Page

VSE/ESA has a home page on the World Wide Web, which offers up-to-date information about VSE-related products and services, new VSE/ESA functions, and other items of interest to VSE users.

You can find the VSE/ESA home page at:

`http://www.ibm.com/s390/vse/`

Abbreviations

ACF	=	Advanced Communication Functions
API	=	application program interface (a VTAM function)
ASCII	=	American National Standard Code for Information Interchange
bps	=	bits per second
BSC	=	binary synchronous communication (type of node connection)
CD	=	change in direction (alternative to EB)
CMS	=	Conversational Monitor System
CRT	=	cathode ray tube
cuu	=	channel-unit-unit (device address format)
DFC	=	data flow control
EB	=	end bracket (alternative to CD)
EBCDIC	=	extended binary-coded decimal interchange code
EOJ	=	end of job
FCB	=	forms control buffer
FM	=	function management
FMH	=	function management header
ICCF	=	Interactive Computing and Control Facility
ID	=	identifier/identification
IRS	=	interchange record separator
JCL	=	job control language
JECL	=	job entry control language
LU	=	logical unit
MDW	=	multiple data stream (workstation)
MLU	=	multiple logical unit
NCP	=	Network Control Program
NDT	=	network definition table
PNET	=	Power NETworking
RJE	=	remote job entry
RU	=	request/response unit
SCS	=	SNA character string
SDLC	=	synchronous data link control (type of node connection)
SNA	=	system network architecture
SPL	=	spool parameter list
VM	=	Virtual Machine (a group of IBM operating systems)
VSE/ESA	=	Virtual Storage Extended/Enterprise Systems Architecture
VTAM	=	Virtual Telecommunications Access Method
USS	=	unformatted system services (a VTAM service)

Summary of Changes

New in this Manual for VSE/POWER 6.4.0

The following changes apply to functions addressed in this manual:

RJE,BSC Trace

The decription of the RJE,BSC trace, formerly in Appendix E of *VSE/ESA Networking Support*, is now included in this manual. See Appendix D, “RJE,BSC Telecommunication Trace” on page 123.

Alterable User Information

The 16 byte user information field USER= of JOB/LST/PUN statements can now be

- replaced by the "UINF=" synonym to avoid confusion with the target user ID
- addressed by ALTER...,UINF... to
  - provide a TCP/IP address, or TCP/IP script file name, for list output
  - change generally the user information of job and output entries
- specified in a consistent way when placed in JECL statements or command operands
- interrogated for the currently executing job by the GETFLD macro from a running program

Four-Digit Year

A four-digit year can be specified in the value of the *CRDATE* operand in the applicable commands.

Displaying Ignored Information

The SHOWIGN parameter can be used with the START command to have a writer task print ignored CCWs and the start of the associated data. This option facilitates debugging.

For a complete list of items...

that are new in this version of VSE/POWER, please see the *VSE/POWER Administration and Operation* manual.

For a complete overview...

of the functions which are new with VSE/ESA 2.4, refer to the IBM manual *VSE/ESA Planning*.

Chapter 1. Introduction

The RJE function of VSE/POWER lets you enter jobs for processing under VSE* from a remote terminal of one of the following types:

IBM 2770 Data Communication System
IBM 2780 Data Transmission Terminal
IBM 3741 Data Station
IBM 3770 Data Communication System
IBM 3780 Data Communication Terminal
IBM 3790 Communication System

Once the job has been entered into the VSE/POWER files, it will be executed in the same way as jobs submitted locally at the central host system.

Binary Synchronous Communication (BSC) and System Network Architecture (SNA) terminal types are supported, and mixed configurations of both are possible.

In general, all terminals and/or systems are supported which, for a BSC terminal, emulate the 2770, 2780, 3741, or 3780 line discipline and, for an SNA workstation, follow the rules defined for the 3770 and 3790.

For information on compatibility, supported processors, programming requirements, storage requirements and calculations, and the generation of RJE support, refer to *VSE/POWER Administration and Operation*.

The concepts of the various line disciplines are explained in the corresponding component descriptions, as listed on page xii. While these devices are physically no longer produced, their handling is still described in these manuals. This is to show how the RJE function of VSE/POWER communicates with these terminals according to their specific line discipline.

RJE,BSC Considerations

When using the RJE function, you must consider the following:

- RJE input is limited to 128-byte records.
- The maximum print line width that can be specified for a 3741 is 132 bytes when the expanded communication feature is installed, and 126 bytes without.
- To use 3770 terminals in BSC compatibility mode, the following specifications in the PRMT macro are required:

  For 3771, 3773, 3774, and 3775 terminals, specify: TYPE=2770.
  For 3776 and 3777 terminals, specify: TYPE=2770 or TYPE=3780.
  If TYPE=2770 is specified, also specify: BE=YES or ABE=YES.
- RJE support in BSC mode for 3770 terminals requires components identical with those of the emulated terminal (2770 or 3780). The exception to this is the use of a diskette.

RJE,SNA Facilities

VSE/POWER with RJE,SNA uses the VTAM application program interface (API) to handle all line management with the SNA workstations that are attached to an IBM 3704 or 3705 Communication Controller in NCP mode.

The support for IBM 3770 SNA includes one logical printer, one logical punch, one logical card reader, and one console with one active session.

The functions provided in conjunction with the IBM 3790 Communication System with RJE functions are:

- Concurrent Device Operation

  Concurrent processing of one inbound card-data stream, one inbound or outbound message, and up to three outbound printers is supported.

- Host-to-3790 Compaction

  Compaction is a method for reducing the amount of data to be transmitted. It improves line utilization beyond the improvements ion. achieved by compression. Compaction is supported for printer data only.

- Remote Data Spooling

  Remote spooling is possible with appropriately equipped workstations, such as the IBM 3790. VSE/POWER supports the transmission of a peripheral data stream information record (PDIR) that provides information pertinent to the job output requirements, such as a forms ID or the number of copies to be produced. The benefits for the user result from the fact that functions are taken from the host processor to the workstation. For example, multiple copies of one data stream need to be transmitted only once.

For detailed information concerning the RJE,SNA I/O management and functions, refer to Appendix C of this book.

Note: The default maximum print line width is 132 bytes and can be extended to 512 bytes by using the MAXRECL operand in the PRMT macro definition (see *VSE/POWER Administration and Operation*).

Terminal Operator Facilities

The terminal operator has the following means to control a system that uses the RJE function:

- Print and punch output operations can be interrupted to allow the terminal operator to enter console, card, or diskette data.
- Commands can be keyed in at the terminal keyboard, entered on punched cards through the card reader, entered in card-image format via magnetic diskette storage or via disk storage, whichever is available.
- User data can be entered from a card reader or from disk or diskette storage. VSE/POWER with RJE,SNA interprets all console/printer keyboard data as terminal operator commands.

  Using BSC terminals, user data may be entered via the console. However, no translation to uppercase characters is performed by VSE/POWER.

- VSE/POWER SNA sessions can be terminated conditionally or unconditionally. Conditional session termination, using the conditional VTAM LOGOFF command or the VSE/POWER SIGNOFF command (which is always conditional), permits active tasks to complete normally (until job boundary) before the terminal is disconnected. If the operator terminates his session by means of an unconditional VTAM LOGOFF command, any task that is currently active for the terminal is canceled, and the terminal is disconnected from the system. In an SNA MLU environment, either all LUs or only selected ones of a given workstation may be logged off.
- Diskette and disk storage devices are transparent to VSE/POWER; only the originating source is known to VSE/POWER, that is, it makes no difference to VSE/POWER if commands are entered directly from the terminal keyboard or indirectly via a diskette device. Also, input and output data formats are the same, independent of direct or indirect data entry and independent of direct output printing/ punching or indirect printing/punching in offline jobs after transmission to a diskette device.

Machine Requirements

Figure 1 on page 4 lists the terminals, attachable I/O devices, and spooling devices that are supported by the RJE function.

Terminal		Attachable I/O Devices			
RJE,BSC	RJE,SNA	Readers	Punches	Printers	Disk / Diskette
2770/2780/ 3741*		N/A N/A	N/A N/A	N/A N/A	N/A N/A
+	3771**	3501	3521***	None	None
+	3773**	None	None	None	1 integrated device
+	3774**	2502/3501	3521***	3784	1/2 diskettes
+	3775/3776**	2502/3501	3521***	None	1/2 diskettes
+	3777-1	2502	N/A	3203	1/2 diskettes
	3777-3	2502	3521	3203	1/2 diskettes, tape
	3777-4	2502	3521	3262	1/2 diskettes, tape
3780		N/A	N/A	N/A	N/A
	3790**	++	N/A	Integrated 3790/3792	Disk/diskette integrated on 3791

N/A = Not applicable
* = Can be connected to the central system by common carrier leased or switched facility.
** = Can be attached in network control mode, remotely via a communications controller or an integrated communications adapter, or locally via local channel attachment. 3770 terminals can also run in 2770/3780 mode for RJE,BSC applications.
*** = Can have Read feature.
\+ = Can run in 2770/3780 mode.
++ = Logical card reader or spooling device available through disk (diskette) storage device on the 3791.

VSE/POWER supports IBM 377x terminal configurations with only one card reader.

Figure 1. List of Supported IBM Devices

For operation of RJE/BSC terminals, the RJE function can support up to 100 remote terminals of the types IBM 2770, 2780, 3741, 3770, or 3780.

For operation of RJE,SNA terminals, VSE/POWER supports up to 250 workstations (single or multiple LUs) of the IBM types 3770 and 3790.

Chapter 2. Remote Operating Procedures

This chapter describes the RJE operations for all the terminal types supported in native mode.

Starting the RJE Function

Starting VSE/POWER with the RJE function can be done in the same way as for local VSE/POWER, that is, either through the central operator console or with autostart. The startup procedures (with and without autostart) are described in *VSE/POWER Administration and Operation*.

Input from the Terminal to the Central System

The input from the terminal to the central system consists of VSE/POWER jobs and RJE terminal commands.

VSE/POWER Jobs

A VSE/POWER job, the primary input to VSE/POWER RJE, consists of the job to be executed at the central system and, optionally, JECL statements. The JECL statements * $$ JOB and * $$ EOJ, for example, are used to identify and delimit a VSE/POWER job entry to VSE/POWER RJE.

JECL also provides a convenient means of specifying how VSE/POWER is to handle a particular job. If JECL statements are not used, system options are assumed when the VSE/POWER job is received at the central system. Normally, as an operator, you will not be concerned with JECL; occasionally, however, your programmer might want you to change or correct his JECL cards. For more information on JECL statements, refer to *VSE/POWER Administration and Operation*.

Terminal Operator Commands

Terminal operator commands allow you to communicate with VSE/POWER or with other users connected to VSE/POWER. These commands enable you to:

- Display the status and manipulate jobs in VSE/POWER queues which have your remote ID.
- Communicate with central and remote operators at your system or on other nodes.

The commands are entered either at the keyboard or at a real or logical card reader. The commands LOGON and LOGOFF are used only at the keyboard.

The commands are listed and explained in Chapter 3, “Terminal Operator Commands” on page 57.

For VSE/POWER RJE commands, the following special rules apply:

- Operands can start in any column after the operation code and one blank space.

- Keyword operands consist of a keyword, followed by an equal sign followed by a value or a list of values. If you specify a list of values, this list must be enclosed in parentheses, and the specified values must be separated from each other by commas.
- Positional operands must be coded in a specific location relative to other operands. A comma must be coded for each omitted (optional) positional operand. Trailing commas may not be coded.
- Often a user ID must be specified, either as originator (of a job, for example) or point of destination (of output). In the statement and command descriptions, this is indicated by the word user-id. A user in this context can be one of the following:

Type of User	Explanation / Format of your Specification
A remote user	For user-id, specify the number of the destination (RJE) workstation as defined to VSE/POWER. Specify this in the form R000 - R250, or 000 - 250.
A VSE/ICCF user	For user-id, specify the four-character ID by which the destination user is known to VSE/ICCF.
A VM/ESA CMS user	For user-id, specify the ID used to define the destination user to VM/SP.
A user at another node	For user-id, specify the ID used to define the destination user to the controlling system at the other node.
A logical user	For user-id, specify the logical name which is defined in the applicable subsystem or at the destination node. Do not use R000 - R250 or 000 - 250 as logical user names.

An ID or logical name specified for user-id cannot be any longer than eight (alphameric) characters.

- An *alphameric* character is defined as follows:
  - Any letter of the alphabet
  - Any of the numerals 0 through 9
  - The number (#) sign
  - The dollar ($) sign
  - The commercial at (@) sign
  - The punctuation marks hyphen (-), period (.), and slash (/).
- **RJE commands must be preceded by * .. in columns 1-4 when submitted via:**

  card reader
  disk
  diskette
  2770 or 3770 BSC terminal console

  When they are entered at a SNA workstation console, * .. must not be entered. In the text of this book, it is generally not used.

- When commands are entered via the (logical) card reader, note these restrictions:
  - The command may be entered only at job boundary which is defined: either by VSE/POWER JECL statements (* $$ JOB and * $$ EOJ) or by VSE job control (// JOB and /&).
  - All commands must be entered in uppercase characters, except the commands for RJE,SNA support and commands entered via the console of a 2770 or 3770 terminal.
  - Every command entered via the card reader must have the form shown in Figure 2.

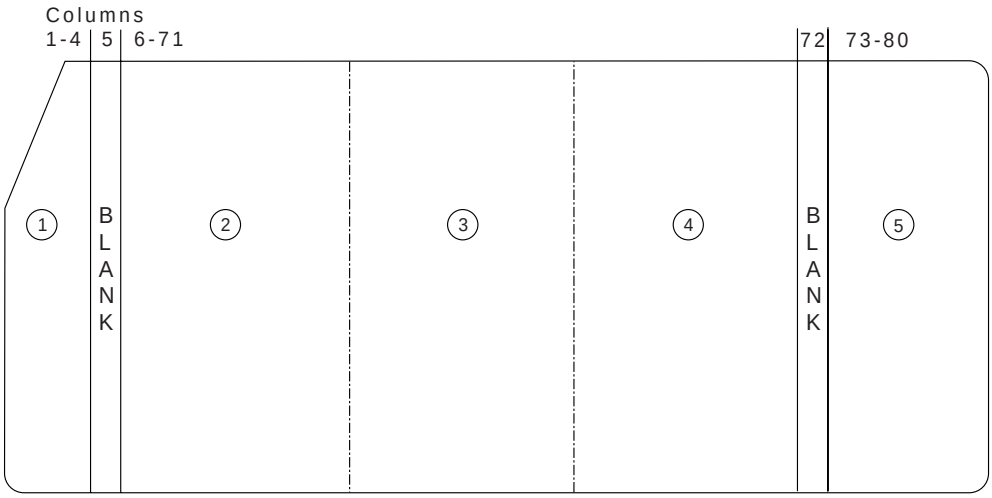


Figure 2. Format of VSE/POWER Terminal Operator Commands

1. **ID field**: Contains * in column 1, blank in column 2, and periods (..) in columns 3 and 4. Column 5 is usually left blank.
2. **Operation field**: Specifies the command code, or operation. It must be preceded by at least one blank. At least one blank must separate the operation from the operand field.
3. **Operand field**: Contains one or more operands, separated by commas. At least one blank must separate the operand field and the comments field.
4. **Comments field**: May contain any information considered helpful by the user. Continuation of the comments field is not allowed. The operation field, operand field, and comments field must be contained in columns 6 through 71. Column 72 must be blank.
5. **Sequence field**: Sequence numbers may be specified in columns 79 and 80 (columns 73-78 are ignored). VSE/POWER returns the sequence number with every response and all diagnostics relating to terminal commands, allowing the terminal operator to correlate the responses he receives with the commands he entered.

Output from the Central System to the Terminal

Two kinds of output are received at the terminal: job output and messages.

Job Output

Job output results from the execution of locally or remotely submitted VSE/POWER jobs. A number of options can be specified in JECL statements and terminal commands, which enable you to:

- Request transmission of output from the central system to your terminal.
- Have output printed or punched at the central system.
- Hold output at the central system until an ALTER or a RELEASE command from remote or a corresponding command from the central operator is issued.
- Request multiple copies of your output.
- Continue interrupted output.
- Delete remotely entered jobs and remote job output.
- Specify type of forms to be used for punched and printed output.

Messages

Messages received at a terminal can be of two types: system messages and broadcast messages.

System messages are of two kinds: system responses to input from the terminal and diagnostic messages.

Broadcast messages are a means of communication between the terminal operator and the central system operator, or between one terminal operator and another.

Broadcast messages with the ALLUSERS destination may be issued by the central operator to inform terminal users, for example, about the unavailability of a central device or about the time at which the central system will be shut down.

System messages and messages to an individual terminal user are sent to the terminal under the following conditions:

- With BSC, on line turnaround, that is, when your terminal switches from transmission of input to receiving of output.
- With BSC, between jobs when your terminal is receiving the job output for two or more consecutive jobs.
- With SNA and if you have a separate line printer, through interruption of the I/O data flow at the terminal (workstation) or at a separate LU in an MLU environment. Also if EOJ occurs on a printer, if the printer is occupied and CONSOLE=NO is specified in the PRMT macro.

ALLUSERS-type messages are sent to your terminal only when you request them by submitting a DISPLAY MSG command.

Messages received are displayed at the console/printer except for 3741 where messages are stored on a separate diskette data set. For other terminals with diskette devices it is also possible to have messages stored on diskettes if the

corresponding component selection character is used for the CSAMSG operand in the PRMT macro.

If you are operating a 3741, the following considerations concerning messages should be kept in mind:

- System messages accepted by the 3741 will use diskette storage space that you may have reserved for job output. You may prefer to suppress these messages, including error diagnostics and status reports, by issuing a STOP MSG command after your SIGNON command at the beginning of your session.
- During a session, the system may not respond as expected (that is, no output is transmitted). In such cases, you may need the messages from VSE/POWER RJE to help you correct the condition. You can attempt to access these messages by transmitting a START MSG command and repeating the operation that failed.

Security

Providing Signon Security

You can protect starting of RJE operations using a signon password before starting the RJE operation.

BSC Terminal

An installation may define an optional line password via the PSWRD operand of the PLINE macro and/or may even overwrite a defined line password by the 'password' operand of the PSTART RJE command. If on this BSC line any terminal wants to start RJE operations lateron, it must provide the matching password within its SIGNON command. For checking and failure message, refer to “Starting RJE Operations” on page 10. If no line password has been defined, the specification of a password within the SIGNON command will be ignored.

SNA Terminal

An installation may define an optional terminal password via the PSWRD operand of the PRMT macro. If a terminal starts RJE operations with the corresponding remote-id by means of the LOGON command, it must provide the matching terminal password with the DATA operand of the LOGON command, as described on page 94. If no terminal password has been defined in the PRMT macro, any password specified in the LOGON command will be ignored.

Providing Data Security

The SEC= operand of the * $$ JOB statement allows a job to *enter* into a VSE/POWER 5.2 node (or later versions) to access VSE/ESA protected resources without using the // ID statement. When specifying the SEC= operand, take the following into account:

- The SEC= operand values in the * $$ JOB statement to specify the VSE security userid and password
- The VSE/ESA Access Control generation parameters, which define security to the VSE/ESA system
- The VSE/POWER SECNODE= parameter in the POWER generation macro.

For information on the SEC= and SECNODE= operands, refer to *VSE/POWER Administration and Operation*. For information on the VSE Access Control, refer to *VSE/ESA Guide to System Functions*.

Starting RJE Operations

You can start an RJE operation either from a BSC or from an SNA terminal.

Starting from a BSC Terminal

To start an RJE,BSC line, the central operator uses the PSTART command. For example, the statement:

```
PSTART RJE,060
```

causes the line with physical device address 060 to be started.

When VSE/POWER has executed this command, you can then start RJE by submitting the SIGNON command followed by the job stream for the first job. The SIGNON command must be the first command submitted from the terminal after the line has been started by the central operator. For example:

```
 SIGNON 123,RJESYS12
```

identifies you and your terminal to the system. The remote ID (123 in the example) must be identical with the one assigned to you when VSE/POWER RJE support was generated at the central installation. The password (RJESYS12 in the example) must be provided only if required by your installation.

Note: The remote ID defined for you is a key to the hardware characteristics of your terminal. Therefore, do not sign on using your remote ID at a terminal with hardware characteristics other than those generated.

The system's response to the above example, provided the password was correct, is the following message:

```
1R15I REMOTE 123 SIGNED-ON ON LINE 060, TIME=hh:mm:ss
```

If an invalid password is specified, or if the SIGNON command is invalid, the system displays message 1R22I instead. If message 1R21I is displayed, an invalid remote ID may have been used.

To start an RJE/BSC line with line-tracing enabled, the central operator uses, for example, the following PSTART command:

```
PSTART RJE,060,,TRACE
```

This starts the telecommunication line with physical address 060 with the option to record all its BSC I/0 events in the telecommunication trace area. For details, refer to the “PSTART RJE” command in *VSE/POWER Administration and Operation*.

Starting from an SNA Terminal

Remote job entry from your terminal cannot take place until the VTAM sublibrary has been included in the phase search chain of the VSE/POWER partition and the central operator has activated the VTAM support required by VSE/POWER. To do this, the operator issues a PSTART RJE,SNA command. You can then log on by submitting the LOGON command followed by the job stream for the first job.

To establish a session, the remote workstation has to issue a LOGON command to the host system. For an MLU such as the IBM 3790, this implies that as many sessions are established between the host and a given workstation as LOGON commands are issued by that particular workstation. The maximum number of LOGON commands must not exceed the number specified by the SESSLIM= parameter of the PRMT generation macro. LOGON commands beyond the number specified by SESSLIM= will be rejected by VSE/POWER. The maximum number of workstations that can log on is specified in the POWER macro, SNA= operand. The content of the DATA fields must be identical for all LOGON commands from the same workstation, except for user data used for job accounting.

The LOGON command must be the first command entered from the terminal after the VTAM interface has been established by the central operator. See the LOGON command in Chapter 3, “Terminal Operator Commands” on page 57.

Your system programmer can use the VTAM/USS tailoring services to build a USS table, thus enabling the remote operator to enter a simplified form of the LOGON command, identical to the BSC SIGNON command. See the SIGNON command in Chapter 3, “Terminal Operator Commands” on page 57.

The system's response to the LOGON or SIGNON command is the message:

```
1V09I REMOTE remote-id LOGGED ON TO ...
```

If the LOGON or SIGNON command is invalid, and the workstation has not been logged on, the central system displays VTAM information-type messages, depending on the nature of the error detected. Information-type messages are also displayed at the SNA workstation.

If the workstation is logged on and an invalid command was entered, message

```
1V22I INVALID XXXXXX COMMAND
```

is displayed.

Requesting Output

When transmission of input is finished, or whenever, after signing on, you expect output to be ready for transmission to your terminal, start a writer task. This is accomplished by submitting a command to start a list task. For example:

```
* .. START LSTn
```

If n is omitted or if it is a value from 1 to 3, the command causes printed output for an MLU workstation (for example, 3790) to be transmitted from the central location to the given logical printer or to be spooled to disk. For a specified class several of these transmissions may occur concurrently. The statement:

```
* .. START PUN
```

causes punched output for the terminal user to be transmitted from the central location to the terminal.

Note: START PUN is not applicable for the 3790.

If both a list task and a punch task are active (single LU workstations only), printed output is transmitted first. If you do not want this, use the STOP command to stop the list task.

On initialization of output to be transmitted to another system, a control record is created first, containing routing information for the receiving system. This information overlays default information such as disposition, class, or priority.

The receiving system reads this data and puts it on its own output queue.

Automatic Transmission of Output (Hot Writer)

After a writer task has been started, it prints or punches all available output (of the selected class, if specified). For RJE,BSC, the system waits approximately 15 seconds after every job to give you a chance to submit new input if TURNEOJ=YES was specified in the PRMT macro. You may also set the output device to unready in the middle of a job, submit input, and then set it to 'ready' again. For interrupting and discontinuing output, see the descriptions for the various devices later in this chapter.

When all output has been transmitted, the writer deactivates itself. It automatically starts again as soon as more output is stored into the queue. If you do not want this "hot writer" facility, you may deactivate the writer task with a STOP command. A "hot writer" may be undesirable when, for example, the same hopper is used for read and punch operations.

For RJE,SNA and when using a 3770 terminal, press the ATTN key and then enter the appropriate command to interrupt print or punch operation.

Hot Writer in a Shared Spooling System

In a shared spooling system, there is "hot writer" support for a deactivated writer task as soon as some output is stored into the queue by a sharing CPU to which the remote terminal is physically not linked.

Although each sharing CPU can be linked to at most 250 RJE workstations, we suggest that you spread at most 250 RJE stations with *unique* remote-ID's over *all* CPUs in a shared spooling complex. This will support unique posting of deactivated writer tasks over the shared spooling complex.

Ending RJE Function Operations

Ending an RJE Operation at a BSC Terminal

Normally you would end an RJE operation, which is also called an RJE session, after all your job streams have been transmitted to the central location or, if job output was ready for transmission to your terminal, after transmission of this output has finished.

To end the RJE session, submit the SIGNOFF command.

If a SIGNON command is submitted during an RJE session, the command is rejected as invalid, that is, a SIGNOFF command must be submitted and executed before another SIGNON command is accepted.

Note that all input following a SIGNOFF command for the same read operation is ignored. Therefore, SIGNOFF should not be submitted together with other commands.

If the terminal has been idle for a predefined number of minutes, sign-off is forced by VSE/POWER RJE. The number of minutes that your terminal is permitted to be idle before a sign-off is forced is defined when VSE/POWER support is generated.

VSE/POWER transmits message 1R16I for a sign-off by a valid SIGNOFF command, and message 1R17I if the line is stopped by the central operator. It transmits message 1R18I if a sign-off was forced as a result of a timeout or a line error.

Ending an RJE Operation at an SNA Terminal

The remote operator can terminate a VSE/POWER RJE,SNA session by entering either a LOGOFF or SIGNOFF command.

The LOGOFF command must be entered at the keyboard/printer after pressing the System Request key (3770 only), or by following the workstation-specific LOGOFF procedure. The SIGNOFF command can be entered at the keyboard/printer or at the logical card reader.

VSE/POWER supports conditional and unconditional LOGOFF commands. SIGNOFF is always conditional.

Note: Using the workstation-specific LOGOFF procedure, you may terminate a single session at an MLU identified by the remote ID. With the SIGNOFF command, you terminate all sessions operating under the same remote ID.

VSE/POWER handles the unconditional LOGOFF as an emergency stop, which means that the termination routines are entered without checking any internal job boundary state. In this case, the current reader job entry will not be added to the queue, and the current printer or punch job will not be deleted from the queue. The conditional LOGOFF is interpreted as a request for a deactivation of the current session. In this case, the termination routines will be entered only after a job boundary has been reached, that is, when processing of the current job entry is complete.

Interruption of Central System Output Transmission

When a print or punch writer is interrupted (as a result of an I/O error, for example), you can enter a FLUSH, a RESTART, or a STOP command. In addition, VSE/POWER causes system recorder (SYSREC) records to be written to the system recorder file (BSC only).

Recommendations for Workstation Operation

The following recommendations should be considered to improve terminal handling:

- You should create a “Terminal Run Book,” describing in detail the individual operating procedures required by the operator for every special circumstance, for example, procedures to label diskettes, notes where to find specific information and help, telephone numbers, and related items. For examples how to record such procedures, refer to Appendix D of the book *IBM 3773, 3774 and 3775 Programmable Communication Terminals Operator's Guide*
- You should alter jobs with very little output to the disposition K (keep) before printing or punching if special forms or cards are required. Should a problem occur during output, or should the wrong forms be used, then the process can

be repeated without loss of output. See the ALTER command in Chapter 3, “Terminal Operator Commands” on page 57.

- You should correct a job, for example, when you realize that the job is invalid, or when the job halts, possibly due to line problems. In these cases, proceed as follows:
  1. Submit an * $$ EOJ statement.
  2. Delete the job using the command DELETE (or DELETE when entered at the terminal printer/keyboard).
  3. Correct the job and resubmit it.
- If VSE/POWER cannot recognize a remote operator command, it issues the message:

  ```
  1R14I EOF ON THE READER
  ```

  and creates a job named AUTONAME in the reader queue. This job is likely to be incomplete or invalid; therefore, you should delete this job. Use the following procedure:
  1. Submit a /& card.
  2. Delete the job using the remote operator command:

     ```
     DELETE RDR,AUTONAME
     ```
  3. Reenter the command not recognized previously.

RJE/BSC Buffer Use and Record Transmission

Depending on the terminal type and PRMT specifications the following buffer sizes are used by RJE/BSC:

IBM 2770

- Neither BE=YES nor ABE=YES specified in the PRMT macro:

  The buffer size is 128 bytes, that is, the maximum record size can be 126 bytes for list or nontransparent punch output. If the records to be transmitted are shorter, or if HFC or SCE is specified in the PRMT macro, logical records are blocked up to 126 bytes and transmitted at once. Spanned records are not supported. For transparent punch output, one 80-byte record is transmitted per buffer.
- BE=YES is specified in the PRMT macro:

  The buffer size is 256 bytes. The maximum record size can be 144 bytes for list output. Logical list or nontransparent punch records are blocked up to 256 bytes and transmitted at once. Spanned records are not supported. For transparent punch output, three 80-byte records are transmitted per buffer without separation characters.
- ABE=YES is specified in the PRMT macro:

  The buffer size is 512 bytes. The maximum record size can be 144 bytes for list output. Logical list or nontransparent punch records are blocked up to 512 bytes and transmitted at once. Spanned records are not supported. For transparent punch output, six 80-byte records are transmitted per buffer without separation characters.

IBM 2780

- MRF not specified in the PRMT macro:

  The buffer size is 400 bytes. Two logical records are blocked and transmitted at once. For nontransparent punch output, two 80-byte records are blocked and transmitted at once. Spanned records are not supported. For transparent punch output, one 80-byte record is transmitted.

- MRF specified in the PRMT macro:

  The buffer size is 400 bytes. Up to seven logical records are blocked and transmitted at once. Spanned records are not supported. For nontransparent punch output, four 80-byte records are blocked and transmitted at once; for transparent punch output, one 80-byte record is transmitted.

IBM 3741

- ABE not specified in the PRMT macro:

  For list output, the buffer size is 128 bytes, that is, the maximum record size can be 126 bytes. When the records to be transmitted are shorter, logical records are blocked up to 126 bytes and transmitted as one record. Spanned records are supported.

  For punch output, either transparent or nontransparent, one 80-byte record is transmitted at a time.

- ABE=YES is specified in the PRMT macro:

  The buffer size is 512 bytes. The maximum record size can be 132 bytes for list output. Four physical records of 128 bytes are blocked and transmitted at once. Each of these physical records can contain multiple logical records. Spanned records are supported, that is, when a logical record does not fit into the remaining space of a physical record, the remainder is moved to the beginning of the next physical record, also if the next physical record is part of the next block. This means that spanned records can occur between physical records as well as between physical (and therefore separately transmitted) blocks. For nontransparent punch output, six 80-byte records are blocked and transmitted; for transparent punch output, only one 80-byte record is transmitted at a time.

IBM 3776

- The IBM 3776 must be specified in the PRMT macro either as a 2770 or 3780.

  If used as 2770, either BE=YES or ABE=YES should be specified since the 3776 has either a 256-byte buffer or, with the buffer extension feature, a 512-byte buffer. If neither is specified, RJE/BSC sends only 128-byte records but accepts longer records from the terminal. (For buffer use, see IBM 2770 above.)

  If used as 3780, buffer extension is assumed, that is, RJE/BSC sends 512-byte records to the terminal. (For buffer use, see IBM 3780 below.)

IBM 3780

- The buffer size is 512 bytes. The maximum record size can be 144 bytes for list output. Logical list or nontransparent punch records are blocked up to 512 bytes and transmitted at once. Spanned records are not supported. For transparent punch output, six 80-byte records are transmitted per buffer without any separation character.

IBM 2770 Terminal Operation

The IBM 2770 Data Communication System, referred to in this manual as the 2770 terminal, may have a variety of I/O devices attached. However, when the 2770 terminal is used for RJE, you as the terminal operator are concerned only with the card reader, the keyboard, the printer, and the card punch. The mechanical features of these devices are described in *System Components: IBM 2770 Data Communication System* This manual also describes how to exchange forms on the printer or correct a card jam in the reader or the punch.

The keyboard on the IBM 2772 console may be used to submit any VSE/POWER RJE command. These commands are identified by "* .." in columns 1-4. The commands may be entered in uppercase or lowercase.

The keyboard may also be used to submit small jobs to VSE/POWER. However, no conversion of lowercase to uppercase takes place; therefore, all characters which must be uppercase must be entered as such.

Your terminal may be equipped with the EBCDIC transparency feature, which allows the terminal to transmit any combination of EBCDIC characters as data, including some combinations that would otherwise be interpreted by the terminal as control characters. Such combinations are likely to occur when output decks of a compiler or an assembler are to be transmitted. Ask your programmer when to operate this switch.

Your 2770 terminal may also be equipped with the buffer expansion feature, which increases the buffer capacity from 128 to 256 or 512 bytes. When this feature is available, the 2770 terminal stores variable-length multiple-card records that are to be transmitted to the central location.

The following procedure provides step-by-step instructions that enable you to set up the terminal and control RJE.

Transmitting Input

1. Turn on the POWER-ON switches at the 2772 console and the 545 card punch.
2. Set the JOB SELECT switch at the 2772 console to VARIABLE. If one of the five predefined job setups corresponds with the settings of steps 2 to 8, omit these steps and set the JOB SELECT switch to the corresponding position.
3. Set the TERM MODE switch to LINE.
4. Set the ANSWER switch to MANUAL.
5. Turn off the INQUIRY MODE and turn on the SELECTION REQUIRED switches.

6. Turn on the INPUT switch that is associated with the card reader (INPUT2 or INPUT3).
7. Turn on the OUTPUT PRINTER switch.
8. Turn on the OUTPUT switch that is associated with the card punch, if it is available.
9. At the card punch:
   a. Place blank cards in the hopper.
   b. Set the AUTO PCH/KEY PCH switch to KEY PCH.
   c. Punch uppercase D in columns 2-80 of a card, and insert this card in the program drum.
   d. Feed in three cards by pressing FEED twice and RELEASE once.
   e. Set the AUTO PCH/KEY PCH switch to AUTO PCH. For Model 4, be sure that the PRINT and LZ PRINT switches are set on.
10. Press CARRIAGE RESTORE on the 2203 or 2213 Printer (Model 2) to align forms.
11. Press NPRO (non-process run out) on the 2502 Card Reader to flush cards.
12. Place the SIGNON card, followed by any input deck to be transmitted, in the card reader.
13. Set the terminal offline. Press CHECK RESET and TERM RESET on the 2772 console. Set the MODE switch to LINE.
14. If data being transmitted or received in this session may include all 256 EBCDIC punch combinations, turn on the TRNSPCY (transparency) switch on the 2772 console.

    Note: Do not change the TRNSPCY switch position during transmission.
15. If the space compress feature is to be used, turn on the SPACE COMPRESS EXPAND switch on the 2772 console. Since this feature can only be used in nontransparent mode, the TRNSPCY switch must be turned off.
16. Set the EOF switch to ON. Press START on the 2502 reader panel to ready the card reader.
17. For a switched line, dial the number and switch the data set to data mode. The actual procedure depends on the type of data set at your location and can normally be found in the operator's instructions for the data set.
18. Press START on the 2772 console to transmit data.

The alarm sounds when the last card in the hopper has been read and transmitted.

Note: If you use the keyboard instead of the card reader for your RJE commands, remember to enter alphabetic characters only at job boundaries.

Requesting Output

1. Transmit a START LST or START PUN command. When print or punch output is available to be received at the terminal and the output device is not in the ready state, the alarm will sound. Correct error indicators on the printer and/or punch according to the error recovery procedures described in *System Components: IBM 2770 Data Communication System*
2. Set the terminal offline. Press CHECK RESET and START on the 2772 console. Set the MODE switch to LINE, to return the terminal to ready state.

3. If it is necessary to submit more input while output is in progress, discontinue output (see “Interrupting or Discontinuing Output” below).
4. The end of output is signaled by the audible alarm, at which time you may submit more input. See “Preparing More Input” on page 19.

Interrupting or Discontinuing Output

To transmit input for an urgent job, it may become necessary to interrupt the transmission of output that is in progress. However, before you actually interrupt the output operation, prepare your input job stream and place it into the hopper of the card reader.

To ensure that no records are lost when you interrupt the output in progress, proceed as follows:

1. Select either a. or b.
   a. If you want to interrupt printer output in progress, press STOP on the printer control panel. Do not use a printer or punch check as a pause to read cards. Missing or duplicate output may occur.
   b. If you want to interrupt punch output in progress, set the AUTO PCH/KEY PCH switch to KEY PCH.
2. Wait for the alarm to sound.
3. Ready the stopped output device again. The records remaining in the buffer will be printed/punched in a short burst, then a pause of approximately 45 seconds follows.

   If you do not take any action, output processing will continue after this pause. If you want to use the reader, proceed as follows:
4. Before the end of the pause, make the output device “not ready” as described in step 1.
5. Set the terminal offline. Press CHECK RESET and TERM RESET.
6. Switch the terminal online again to transmit your input cards.
7. Ready the reader.
8. When all cards have been read, ready the output device again; output will resume.

Special Forms Output

If the programmer has specified special forms or cards in his * $$ LST or * $$ PUN statements and the output is ready to be transmitted, the central system will send you a message indicating the required forms or cards. In this case, mount the required forms on the printer or place the required cards in the hopper of the punch and transmit the GO command from the reader. Upon receipt of this command, the central system continues transmitting output.

Preparing More Input

If additional jobs become available while your terminal is transmitting input, use the following procedure:

1. Wait for the alarm to sound.
2. Place the additional input cards into the hopper of the card reader.
3. Press START on the card reader.

If the previously submitted input stream includes a SIGNOFF command, make sure that a valid SIGNON command is placed in the hopper as the first card to be transmitted when the reader is started.

If your terminal is receiving output, proceed as follows:

1. Place the additional input into the hopper of the card reader.
2. Wait until the current output has been completed.
3. If your terminal was receiving punched output, remove the punched cards from the stacker and blank cards, if any, from the hopper and from the punch feed (by an NPRO operation).
4. Set the terminal offline. Press CHECK RESET and TERM RESET on the 2772 console. Set the MODE switch to LINE and continue with steps 14 through 18 described above under “Transmitting Input” (see page 17).

Note: If possible, prepare additional input before the terminal reaches the end of its current input or output operation. A terminal is not allowed to remain idle indefinitely, and when the time limit set during VSE/POWER generation has been exceeded, sign-off is forced. For a switched line this means physical disconnection.

Error Recovery Procedures

When a permanent I/O error occurs on an RJE line, the central system will stop the line. The central system operator will have to start the line again after the cause of the error has been eliminated. When a timeout occurs, the central system will perform sign-off processing.

Nonpermanent line errors such as data checks or lost data do not cause an RJE line to be stopped. If errors of these types occur, the system keeps retrying until either the operation is successfully completed or the line is stopped by the central operator.

Nonpermanent line errors may occur when, for example, you are known to VSE/POWER as the user of a 2780 or a 3780 terminal, but you attempt to sign on at a 2770 terminal. In this case, the existing terminal features do not match the defined terminal features. An I/O trace may be useful in determining the cause of nonpermanent line errors (ask your programmer for instructions).

Most of the problems that you may encounter result in indicator lights being turned on, either on the 2770 console or on the terminal I/O device concerned, or on both. Some of these lights are not error indicators, but they help to diagnose the error situation. For example, if the OVERRUN indicator lights up frequently while printing, the terminal is probably defined to the system with too large a buffer size. All indicator lights are explained in detail in *System Components: IBM 2770 Data Communication System* where error recovery procedures for rare problems not

discussed in this manual are also described. This chapter merely addresses those errors which you might be confronted with at your terminal while it is transmitting RJE input and receiving remote job output.

Error Recovery when Transmitting

INPUT2 or **INPUT3** (flashing).

This indicates a card reader problem while transmitting. Check additional indicators as shown below to determine the cause of the error condition and take corrective action as indicated.

ATTENTION.

Possible causes are: full stacker, empty hopper with EOF off, cover open. Correct the error situation and press START on the reader and on the 2772 console.

READ CHECK or **VALIDITY CHECK**.

The card in the read station contains invalid or faulty punching, or a card jam has occurred. The last card in the stacker (if there is no jam) and the following card (which is run out by pressing NPRO after the cards in the hopper have been removed) must be read again. After appropriate corrective action, place these two cards in front of the cards in the hopper and press START on the reader and on the 2772 console.

If, as a result of a severe card jam, you cannot determine the correct order of the affected input cards, attempt a job restart (see “Restart” at the end of this section).

TERMINAL ADDRESS.

VSE/POWER RJE is trying to send output while you are attempting to start transmission of input. Continue with your input procedure until the BID light turns on, press CHECK RESET, and wait for input to begin. If the TERMINAL ADDRESS light turns on again, press CHECK RESET a second time.

If you are unable to start transmission of input, you may have interrupted transmission of output from the central system to the terminal. If so, make the output device ready to accept the output and wait until the end of the output before you attempt to transmit input again.

BID RETRY.

VSE/POWER RJE failed to respond to your terminal within 15 to 45 seconds (the exact time depends on the wiring option that was chosen for your terminal). Attempt a job restart (see “Restart” at the end of this section). If any cards are in the stacker, a duplicate block of data will probably be sent.

INPUT CHECK, BUFFER CHECK, TRNSPCY CHECK.

When any of these lights is on, attempt a job restart (see “Restart” at the end of this section). If your input decks include cards that may contain any of the 256 EBCDIC punch codes, be sure the TRNSPCY switch is on.

RECORD CHECK or **LINE CHECK**.

Either of these lights or both may go on when the system is not responding within three seconds. This may happen, for example, when the system is waiting for an operator response. As soon as the wait is satisfied, processing continues and the light is turned off. If this does not happen within a few minutes, call the central operator.

Restart

To restart a job, proceed as follows:

1. Place the following cards into the hopper of the card reader: A /& card (* $$ EOJ if JECL is used) followed by a DELETE command and the original input cards for the job.
2. Follow the procedure described in steps 13 through 18 under “Transmitting Input” above (see page 17).

Error Recovery when Receiving

CARRIAGE CHECK, FORM CHECK, END OF FORM, CARRIAGE INTERLOCK.

These indicators are turned on by conditions such as a carriage tape not being mounted, a forms jam, or a printer carriage not being ready. Correct the condition; then press:

1. RESET on the printer,
2. CHECK RESET on the 2772 console,
3. START on the printer, and
4. START on the 2772 console.

PRINT CHECK, other **CHK** lights.

A parity check or some other hardware malfunction has occurred on the printer. For a detailed discussion on the CHK lights on the 2203 printer, see *System Components: IBM 2770 Data Communication System*

When you attempt recovery from any of the above printer errors, print lines may be lost. To retrieve lost output, you can submit an appropriate RESTART command.

CHECK or card-punch-not-ready condition.

Possible causes are hopper empty, stacker full, or card jam. Proceed as follows:

1. Remove all cards from the stacker and from the eject station.
2. From the cards removed, discard those which do not have a column 81 punch.
3. Clear the entire card feed path.
4. Place blank cards into the hopper.
5. Press FEED twice and RELEASE once.
6. Set the keyboard switch to AUTO PCH.
7. Press CHECK RESET and START in this sequence.

The first card that feeds into the stacker after error recovery is blank. Discard this card.

During recovery from a punch error, punched output records contained in the internal buffer of the 2770 terminal may be lost. Rather than submitting a

RESTART command to retrieve these records, enter a
STOP PUN command and start the punch again by a subsequent
START command.

The following 2772 console lights may also require your attention while the terminal is receiving output from the central location:

TERMINAL ADDRESS.

VSE/POWER is attempting to send output to your terminal, but the terminal output device is not ready. Make sure that all switches at your terminal are set up correctly, ready the output devices, and press CHECK RESET on the 2772 console.

OVERRUN.

This light usually indicates that specific features of the 2770 were incorrectly specified during RJE support generation or that you signed on using a remote ID for another terminal. Ask the central operator for help; he may have to stop and restart the line so that you can sign on with the correct remote ID.

BUFFER CHECK.

Have the central operator stop the line and restart it.

LINE CHECK.

VSE/POWER is attempting a re-transmission. If this re-transmission is successful, the light is turned off. If the light remains on and printing or punching does not continue within a short time, attempt a job restart (by submitting a RESTART command).

IBM 2780 Terminal Operation

The IBM 2780 Data Transmission Terminal, referred to in this manual as the 2780 terminal, consists of at most one card reader/punch and one printer. The procedure described here assumes that the terminal is composed of both devices. A 2780 terminal may be equipped with the EBCDIC transparency feature, or with the automatic turnaround feature, or with both.

For a brief discussion of the EBCDIC transparency feature, see the introductory paragraphs under 16.

The automatic turnaround feature switches the reader/punch automatically from a reader to a punch whenever the reader encounters a blank card. It follows that you must be careful not to place any blank cards within an RJE input deck when this feature is used. The advantage of the feature is that no intervention is required to start punching the output from a job. A back-lighted pushbutton is provided to turn the automatic turnaround feature on and off.

Detailed information about the functional characteristics of the 2780 terminal, including information on how to establish a communication line for the sign-on procedure, are given in *Component Description: IBM 2780 Data Transmission Terminal*

The following procedure provides step-by-step instructions that enable you to start the terminal and control RJE under VSE/POWER at a 2780 terminal.

Transmitting Input

1. Turn on the POWER switch.
2. Set the MODE switch first to OFFLINE, then to TSM (transmit) or TSM TRSP (transmit transparent) if the transparency feature is available and is to be used.

   Note: Do not change from transparent to nontransparent mode during transmission.
3. Place your SIGNON command, followed by additional terminal commands as may be required, and by job input cards, into the hopper of the card reader.
4. Ready the printer.
5. If you expect punched output, and the automatic turnaround feature is available, place blank cards behind your input and press AUTO TURNAROUND.
6. Press END-OF-FILE (this turns on the END-OF-FILE light).
7. If the connection is via a switched line, dial the appropriate number and switch the data set to data mode. The actual procedure is given in the operator's instructions for the data set.
8. Press START twice. The READY light goes on and the data will now be transmitted.
9. The alarm sounds (and the READY light goes off) when:
   - A blank card has been sensed by the automatic turnaround feature if this is used.
   - The last card in the hopper has been read and transmitted.
10. Press STOP to turn off the alarm (the alarm is also turned off when the terminal receives output from the central system). This removes the card punch and the printer from the ready state. Ready the devices again.

Carriage Control Limitation

The range of carriage control functions for the IBM 2780 terminal is smaller than that provided for local printers. Specifically, the IBM 2780 does not provide skips past channel 8, nor space suppression, nor the use of a UCS buffer. When the 2780 terminal is used for remote output, skips to channel 9 and space suppression should be avoided. If these control functions are requested, they will result in a single space.

Requesting Output

The instructions given below assume that a START LST command, or a START PUN command, or both have already been transmitted.

To receive punched output (if the automatic turnaround feature is not installed):

1. Set mode switch to PUNCH or RECEIVE. Do not ready the printer.

   Note: Any message that is received when the mode switch is set to PUNCH will be punched, although the printer may be ready.

2. Press RESET.
3. Place blank cards in the hopper.
4. Press START on the card read/punch.
5. After punching has started, ready the printer to receive printed output (see below).

To receive printed output:

1. Set the mode switch to one of the following positions:

   TSM, TSM TRSP, or REC.

2. Press START on the printer.

If it is necessary to submit more input while output is in progress, discontinue output, follow the procedure given under “Interrupting or Discontinuing Output” below.

The end of output is signaled by the audible alarm (unless the reader is in the ready state), at which time more input may be submitted. See “Preparing More Input” on page 25. Press STOP to turn off the alarm (the alarm is also turned off when the terminal receives more output from the central installation). This removes the card reader and the printer from the ready state. Ready the devices again.

Interrupting or Discontinuing Output

It may be desirable to interrupt or discontinue output at a terminal if urgent input is waiting to be transmitted to the central installation. However, before you actually interrupt the output in progress, prepare your input job stream and place it into the hopper of the card reader.

To ensure that no records are lost when you interrupt output in progress, proceed as follows:

1. Press STOP. This makes the currently active output device “not ready.” Do not use a printer or punch check as a pause to read cards. Missing or duplicate output may occur.
2. Wait for the alarm to sound.
3. Ready the stopped output device again. The records remaining in the buffer will be printed/punched in a short burst, then a pause of 42 to 63 seconds will follow.

   If you do not take any action, output processing will continue after this pause.

4. Before the end of the pause, press STOP again.
5. Reset the terminal by switching it to OFFLINE.
6. Turn the switch to TRANSMIT.
7. Ready the reader; the system will start reading cards.
8. When all cards have been read, ready the output device again; output will resume.

Note: The command RESTART task,-n can be used to resume output processing.

Special Forms Output

If the programmer has specified forms or cards in his * $$ LST or * $$ PUN statement and the output is ready to be transmitted, the central system will send you a message indicating the required form or card number:

1. For printed output, place the required forms on the printer and enter a GO command. Upon receipt of this command, the central system transmits the output.
2. For punched output, empty the card reader.

   If the automatic turnaround feature is available, place a GO command and the required blank cards in the hopper; then press AUTO TURNAROUND and START.

   If the automatic turnaround feature is not installed:

   - Make sure that the printer is not ready
   - Place a GO command in the hopper
   - Press END-OF-FILE once and START twice

   After the card has been read, put the required blank cards in the hopper, set the MODE switch to REC, and press START on the reader. When punching has been started, press START on the printer.

Preparing More Input

While output is being received at the printer, you may load and ready the card reader to send more input (unless automatic turnaround is active or the mode switch is set to REC). If the output is being received at the punch, you must wait until it has been completed. Prepare the card reader as follows:

1. Perform steps a. and b.

   a. Remove punched output and blank cards (if any).

   b. Reload and prepare the reader to transmit input. The reader must be made ready within approximately 30 seconds, multiplied by the number of retries specified in the RETRY generation option, to prevent the central system from disconnecting the line.

2. Set the MODE switch to either TSM or TSM TRSP and continue as described under “Transmitting Input” on page 23 (step 3).

Note: If possible, prepare additional input before the terminal reaches the end of its current input or output operation. A terminal is not allowed to remain idle indefinitely, and when the time limit set during VSE/POWER generation has been exceeded, sign-off is forced. For a switched line this means physical disconnection.

Error Recovery Procedures

When a permanent I/O error occurs on an RJE line, the central system will stop the line. The central system operator will have to start the line again after the cause of the error has been removed. When a timeout occurs, the system will perform sign-off processing.

Nonpermanent line errors, such as data checks or lost data, do not cause an RJE line to be stopped. If errors of these types occur, the system keeps retrying until either the operation is completed successfully or intervention occurs at the terminal.

Nonpermanent line errors may occur when, for example, you are known to VSE/POWER as the user of a 2780 terminal but you attempt to sign on at a 2770 terminal. In this case, the existing terminal features do not match the defined terminal features. An I/O trace may be useful to determine the cause of nonpermanent line errors (ask your programmer for instructions).

Most of the problems that you may encounter will result in control panel indicator lights being turned on, on the reader/punch, or on the printer, or on both. Some of these lights are not error indicators, but they help diagnose the error situation. For example, if the terminal stops after the SIGNON command has been transmitted and the I/O BFR FULL indicator is on, the central system is possibly trying to indicate that your SIGNON command was invalid (actual terminal features and defined terminal features may not match). These lights (also referred to as status indicators) are: DATA SET READY, LINE, I/O BFR FULL, END OF FILE, CTR1, CTR2, CTR4, READY.

All indicator lights are explained in detail in *Component Description: IBM 2780 Data Transmission Terminal* where error recovery procedures for rare problems not discussed in this manual are also described. The present manual merely addresses errors with which you might be confronted at your terminal while it is transmitting RJE input and receiving remote job output.

Error Recovery when Transmitting

TERM ADDR.

If the TERM ADDR and the READY lights are on and no cards are being read, proceed as follows:

1. Remove the cards from the hopper and push NPRO to run out the two cards still in the feed.
2. Put these two cards in front of the cards you removed from the hopper and replace all these cards in the hopper.
3. Attempt a power-on reset.
4. Wait for the TERM ADDR light to go on; this may take as long as 6 seconds.
5. Attempt another POWER-ON reset, press END OF FILE and then START; the END OF FILE and READY lights will go on.

Card reading should start immediately. If it does not and the TERM ADDR light goes on again, repeat the above steps.

DATA CHECK.

This indicator light goes on together with EQUIP CHECK and, possibly, PARITY CHECK to indicate that the reader could not read a card correctly. Proceed as follows:

1. Remove the cards from the hopper and push NPRO to run out the two cards still in the feed. The first of these two cards caused the error.
2. Correct the erroneous card.

3. Put the two cards back into the hopper, followed by the cards you removed in step 1.
4. Press END OF FILE and then START; the END OF FILE and READY lights will go on.

OVERRUN, PARITY CHECK with or without **EQUIP CHECK, RECORD** or **LINE**.

When any of these lights (or light combinations) go on, determine how many cards have been read but not yet transmitted. This is indicated by the indicators CTR1, CTR2, and CTR4. For example, if CTR1 and CTR2 are on, three cards have been read but not yet transmitted. To recover from the error situation, proceed as follows:

1. Remove the cards from the hopper and push NPRO to run out the two cards still in the feed.
2. Remove the last n + 2 cards from the stacker (where n is the number of cards read but not yet transmitted).
3. Put these cards back into the hopper, followed by the cards you removed in step 1.
4. Press END OF FILE and then START; the END OF FILE and READY lights will go on.

EQUIP CHECK.

A hardware failure has occurred. Proceed in the same way as for a DATA CHECK light, but it should not be necessary to correct a card.

LINE.

Wait for the reader to start reading again or for the alarm to sound (within 15 to 45 seconds depending on the wiring option chosen for your terminal). If the alarm sounds and cards are in the stacker, proceed as follows:

1. Cancel the job, which has been partially read, by transmitting an /& card (* $$ EOJ if JECL is used) followed by a DELETE command for the job.
2. Retransmit the job from the beginning. The first card is an * $$ JOB card if JECL is used; it is a // JOB card if JECL is not used.

If there are no cards in the stacker, press END OF FILE and then START. The END OF FILE and READY lights will go on.

HOPR.

No card was fed. Check the edges of the card at the bottom of the hopper and, if necessary, punch the data into a new card; put the card back into the hopper (as the first card to be fed); press END OF FILE and then START; the END OF FILE and READY lights will go on.

For other combinations of status indicators, consult the manual *Component Description: IBM 2780 Data Transmission Terminal* Most combinations of status indicators indicate misfeeds or jams.

Error Recovery when Receiving

Some of the indicators are self-explanatory. For example, if the END OF FORM light turns on, you need another box of forms; if the FORM CHECK light turns on, a paper jam has occurred.

Most of the error indications not discussed in this manual involve jams or misfeeds. Consult the manual *Component Description: IBM 2780 Data Transmission Terminal* for instructions on how to resolve these problems.

OVERRUN and **INCP**.

If these two error lights are on, you probably specified a wrong remote ID in the SIGNON card. In this case, sign on again, using the correct remote ID.

TERM ADDR.

Proceed as follows:

1. Press STOP and CHECK RESET on the reader/punch.
2. Make the punch ready (see the discussion of TERM ADDR under “Requesting Output” above).

EQUIP CHECK.

A hardware failure has occurred. Proceed as follows:

1. Press STOP.
2. Remove the cards in the hopper, press NPRO to run out the cards in the feed, and discard them.
3. Make the punch ready (see the discussion of DATA CHECK under “Error Recovery when Transmitting” above).

PARITY CHECK.

If the light turns on while your terminal is receiving punched output:

1. Remove the cards from the hopper and press NPRO to run out the two cards in the feed.
2. Remove from the stacker and discard the last n + m cards, where
   - **n =** Number of cards represented by the CTR lights.
   - **m =** 1 if any or all of the CTR lights are on together with the I/O BFR FULL light.
   - **m =** 2 if all CTR lights are off and the I/O BFR FULL light is on, or if the I/O BFR FULL light is off.
3. Place blank cards into the hopper again and make the punch ready.

If the light goes on while your terminal is receiving printed output, then:

1. Attempt a power-on reset.
2. Press START on the printer.

One or more duplicate lines may be printed.

SYNC CHECK.

An incorrect line has been printed. If this occurs, then:

1. Press STOP and RESET on the printer.
2. Press START on the printer.

The line in error will be reprinted.

IBM 3741 Terminal Operation

The IBM 3741 Data Station is supported as an RJE terminal under VSE/POWER. The 3741 terminal (as it is referred to in this manual) is part of the IBM 3740 Data Entry System, a system used to record data on an IBM diskette.

This diskette is used to record all data sent from, and received at, the 3741 terminal while you are operating your terminal under VSE/POWER RJE. The procedures required to enter input data onto diskette and to print and punch output data once it has been received on diskette are not described here. It is assumed that you are familiar with these local functions of the 3741 terminal as they are described in *IBM 3741 Data Station Reference Manual*, and in *IBM 3741 Data Station Operator's Guide*

Several jobs can be submitted via the 3741 terminal, but the output may be returned in random sequence, making it difficult for you to use the labels to identify the output. If it is not convenient for you to submit single jobs, you might consider submitting your input and requesting output in separate sessions, entering jobs in the HOLD state during one session and releasing them using the RELEASE command during a later session when you are ready to receive output.

Note: The 3741 terminal sends an end-of-transmission (EOT) to VSE/POWER if the diskette capacity is exceeded. The last record received, or, if the Expanded Communication Feature (ECF) is installed, a part of the last block received cannot be stored on diskette. The 3741 terminal does not give an indication of how many records do not fit. VSE/POWER keeps the last record or block transmitted until the 3741 terminal acknowledges that record or block positively. It is then written to the following diskette. If ECF is installed, the last block is sent twice. This results in duplicate records if part of the block is already on the previous diskette.

Make sure that your data sets are labeled correctly, as described in the *IBM 3741 Data Station Reference Manual*

Transmit Data to VSE/POWER

Transmit (T) and transmit transparent (P) mode allow you to transmit jobs and commands to VSE/POWER. Using these modes means that manual intervention is required to receive data from VSE/POWER.

Examples of application:

- Sign on to VSE/POWER, transmit data to VSE/POWER, and sign-off without having data to be received. In this case, the SIGNON command should be followed by a STOP MSG command. Otherwise RJE/BSC tries to send at least the sign-on/sign-off messages.

- Transmit data to VSE/POWER from another diskette after receiving from a previous diskette has been completed.
- When receiving of data is completed and you want to sign-off, you just transmit the SIGNOFF command in T-mode (STOP MSG should have been given before).

The following procedure provides step-by-step instructions that enable you to set up the 3741 terminal and control RJE.

1. Start the 3741 terminal and load the input diskette.
2. Position the diskette to the data set label of the records where you want the transmission to start. At the beginning of a session, this will normally be your SIGNON command.
3. Press FUNCT SEL upper and COMM (HEX key).
4. If you are using a nonswitched network, continue with step 5.

   If you have a switched network and are dialing, press M and proceed with step 5.

   If you are answering in a switched network and using manual answer with either the IBM 3872 or the IBM 1200 bps integrated modem, answer the phone when it rings and raise the exclusion key. Proceed with step 5.
5. Press the appropriate mode key and proceed as described under “Receive Data from VSE/POWER” below.

Receive Data from VSE/POWER

Receive (R) mode allows you to receive output data. This mode requires that the SIGNON and START commands are transmitted prior to data from VSE/POWER.

Examples of application:

- When you prepare a sign-on diskette with the SIGNON and a START LST command and you exchange the diskette after the sign-on messages are received, that is, the first file is completed, you can receive the requested output in R mode.
- Receive data from VSE/POWER on a second diskette in case of a file with several volumes.

  1. Start the 3741 terminal and load the output diskette.
  2. Position the diskette to the data set label of the records where you want transmission to start.
  3. Press FUNCT SEL upper and COMM (HEX key).
  4. If you are using a nonswitched network, continue with step 5.

     If you have a switched network and you are dialing, press M and proceed with step 5.

     If you are answering in a switched network and you are using manual answer with either the IBM 3872 dial modem or the IBM 1200 bps integrated modem, answer the phone when it rings and raise the exclusion key. Proceed with step 5.
  5. Press the appropriate mode key.

6. In a nonswitched network, pressing the T, P, or R mode key completes the procedure and starts data transmission.

   For a switched network, or if you selected B or D mode while using a nonswitched network, the remainder of the procedure depends on the type of modem you are using:

   – For the IBM 1200 bps integrated modem or the IBM 3872 dial modem proceed to step 10.

   – For the IBM 3976 Model 3, continue with step 7.

7. If automatic answering is to be used, press AUTO ANSWER on the modem.
8. Dial the central installation. An answer tone will indicate that the central installation is ready.
9. Press DATA, but do not hang up the hand set. The procedure is now complete, and data transmission is started.
10. The following steps complete the communication procedure for a 3741 terminal using the IBM 1200 bps integrated modem or the IBM 3872 dial modem:

    – Dialing

      - Raise the exclusion key and dial the central installation.
      - An answer tone will indicate that the other location is ready. As soon as the answer tone drops, hang up the hand set. The procedure is now complete, and data transmission is started.

    – Answering

      - If automatic answer is in effect, the procedure is complete and data transmission is started.
      - If manual answer is in effect, wait until the status is displayed on line 6 of the CRT screen, then hang up the hand set. The procedure is now complete and data transmission is started.

        Note: A display in positions 38 and 39 of the status line on the CRT screen will indicate that transmission of data is complete.

Transmit/Receive Data

Transmit/receive (B) and transmit transparent/receive (D) mode have the same capabilities as T or P mode concerning transmission, or R mode concerning receiving. The difference is that you are able to transmit from and receive on the same diskette without operator intervention. After transmission completion, for example “BT” is indicated in the status line, the terminal switches from transmit to receive mode.

Examples of application:

- Sign on to VSE/POWER and get information about data in the VSE/POWER queues.
- Transmit the START command and receive the requested output.

Data Set Labels

Make sure that your data set labels are correct, as described in the *IBM 3741 Data Station Reference Manual* . Remember that the labels for receive data sets must have the character B in position 41.

Output and Special Forms Consideration

Messages may be issued from VSE/POWER or the central operator. Any sequentially received messages will be stored in a separate data set even in those data sets which you may have reserved for output. You may not want to have messages sent to you, in this case you should issue a STOP MSG command. But you should take into consideration that you will get no information if any error occurs. If special forms output is used, the “mount forms message” will not be transmitted to your terminal. It should be considered therefore to prepare enough data set labels to receive messages as well as print and punch output.

Multiple output with different forms number specification may be written to one diskette. There are three ways to receive and print those data:

- Receive all data on one diskette. The “mount forms message” is then stored in the data set before the one which requires the forms change. The remote operator can start the offline printing and stop the printer and change forms whenever the “mount forms message” occurs. This is not a very convenient way because the data sets with the same forms number may not be received sequentially (due to priority setting).
- You may assign a separate output class for every forms number, that is, all jobs with forms number XYZ may have class X, and all jobs with forms number 123 may have class C. You can have a diskette for every forms number, that is, you have a diskette with a START LST,X in one data set and all other data sets specified as bypass data sets to receive the class X output. You may also have a second diskette with STOP LST and START LST,C in one data set and all other data sets specified as bypass data sets to receive class C output. After completion of receiving on the first diskette (“BC” in the status line), you insert the second diskette and continue with B mode.
- You can specify TURNEOJ=YES in the PRMT macro. In this case the transmission is completed (that is, “BC” in the status line) whenever a data set is completed on the diskette and no further messages are to be received.

  The following procedure could be used in this case:

  1. Set up a diskette (A) with one data set containing a “START LST,C” command, and the other data sets specified as BYPASS data sets (that is, “B” in data set label position 41).
  2. Set up a series of other diskettes with multiple files, all specified as BYPASS data sets.
  3. Transmit diskette (A) in B-mode, and receive the first listing.

  When the “BC” status code is received, remove this diskette and, without pressing RESET on the 3741, mount the second diskette (R-mode) and receive the second listing. When an “RC” status code is received, (that is, reception complete for the second listing), insert the third diskette in the same way as the second and continue until all listings have been received. Each listing, therefore, will be received on a separate diskette, always beginning in sector 01001.

The last two possibilities allow the operator to have control over all output jobs and mount forms in a controlled manner.

Example

The following example shows how a diskette may be prepared to:

- Sign on
- Transmit commands and BRDCST-messages
- Transmit a job
- Receive messages
- Receive punch output

The layout of this diskette is as follows:

```
HDR1 SIGNON              080 01001 01006
                                   01007
* .. SIGNON 022
* .. B 000,'I WILL SEND YOU JOB B FOR EXECUTION IN BG'
* .. B 000,'I CAN RECEIVE PUNCH DATA OF JOB D AND F'
* .. B 000,'PLEASE MAKE THE JOBS DISPATCHABLE IN CLASS D OR F'
* .. START PUN,DF
HDR1 INDATA              080 01007 01015
* $$ JOB JNM=B
// JOB B
.
.
.
.
.
* $$ EOJ
HDR1 DATA001             128 01016 01016
B                                  01016
HDR1 DATA002             128 01016 01016
B                                  01016
HDR1 DATA003             128 01016 01016
B                                  01016
HDR1 DATA004             128 01016 01016
B                                  01016
```

After the connection to the central system is established, data sets SIGNON and INDATA will be transmitted to VSE/POWER. After transmission is completed, (“BT”-status) data are received in the following sequence:

- The sign-on message will be stored in data set DATA001.
- The first punch output will be stored in data set DATA002.
- The second punch output will be stored in data set DATA003.
- If the central operator has responded to your messages, his messages will be stored in data set DATA004.

Note: The extent fields (BOE,EOE,EOD) for the bypass data sets will be updated as well as the record length field. So it is easy to find out how many data sets you have received.

IBM 3741 Enhanced Support

Prerequisite to the 3741 terminal enhanced support is the installation of the expanded Communication Feature (ECF), and ABE=YES is specified in the PRMT macro. VSE/POWER support is provided in the following areas:

- Multiple record transmission
- Variable-length support for SYSIN data
- Multiple diskette support
- 132 print position support

Multiple Record Transmission

Besides the fixed record length of 128 bytes, a block of up to 512 bytes may be transmitted. Records to be sent are retrieved from the diskette and transmitted sequentially by inserting an inter-record separator (IRS) after every record. This specific technique allows transmission of three 128-byte records in one block. When the 3741 terminal is in receive mode, an IRS inserted by the sending station is skipped, so that four 128-byte records per block may be received.

After VSE/POWER has read the 512-byte block, the received data is deblocked and logical records are passed sequentially to the logical reader. IRS as well as new line characters are skipped. Spanned records crossing block boundaries are not supported for input.

The output terminal routine provides blocking of four 128-byte records, each followed by an IRS character. When a block is filled, it is transmitted to the remote station.

Variable-Length Support for SYSIN Data

Input files of different length are supported for job control records as well as for user data. User data may be up to 128 bytes in length. Job control data may reside in the same extent; however, only the first 80 bytes of the record are processed.

The records within a diskette file must all be of an equal length.

Multiple Diskette Support

For information on multiple-volume diskette output, see “IBM 3741 Terminal Operation” on page 29.

132 Print Position Support

LIST=132 must be generated in the PRMT macro.

Signing Off

A SIGNOFF command must be submitted if you are using a nonswitched network. No SIGNOFF command is necessary if you are using a switched network: sign-off is forced and the line is disconnected when you return the modem to talk mode and hang up the hand set.

Error Recovery Procedures

The error codes that may appear on the screen of your 3741 terminal during RJE operation, their causes, and a description of the relevant recovery procedures are documented in the *IBM 3741 Data Station Operator's Guide*

IBM 3770 Terminal Operation in SNA Mode

This section combines information for the data communication terminals: 3771, 3773, 3774, 3775, 3776, and 3777. In the following the term “3770 terminal” is used in all cases where the pertaining statement applies to any of the above data communication terminals. Information on every individual terminal, the attachable I/O devices and features can be found in the manuals listed in the bibliography at the back of this publication.

Suspending Output for the Transmission of Input

It may be desirable to discontinue output at a terminal if urgent input is waiting to be transmitted to the central installation. If possible, prepare your input before interrupting the transmission of output. Only print and punch operations can be interrupted; the message processor does not allow its output to be interrupted for the transmission of data to the central installation, as it normally transmits only small amounts of data at any given time.

To interrupt print or punch output, proceed as follows:

1. Press the ATTN key.
2. Wait until the keyboard is unlocked, then enter commands from the console keyboard, the card reader, or the diskette device as required, or take the necessary steps to enter card or diskette data.
3. When all input has been transmitted (EOM has been entered for console commands, or end-of-file has been reached for card input), the interrupted output processor will continue from the point where it was interrupted.

Note: If you inadvertently pressed the ATTN key, either start a keyboard-to-line job followed by EOM or just enter any VSE/POWER terminal operator command (DISPLAY LST, for instance) and then press the EOM key. The output processor will continue printing or punching from the point where the output file was interrupted.

Special Forms or Cards Output

If the programmer specified special forms or cards in his * $$ LST or * $$ PUN statements, and the output is ready for transmission to the terminal, VSE/POWER displays message:

```
1Q40A ON task FORMS ffff NEEDED FOR jobname jobnumber
```

indicating the required forms or cards; this is followed by the message:

```
1V17A task SUSPENDED FOR FORMS MOUNT
```

Where task can be LST, LST1, LST2, LST3, or PUN.

After the display of message 1V17A, proceed as follows:

Mounting Forms on the Printer

Mount the required forms on the console printer or on the IBM 3784 line printer. After pressing the ATTN key, you can issue a SETUP LST or SETUP LST,n command. During the printing time for the specified number of pages, you can manually align the printer forms. As soon as the last page has been printed, message 1V17A is repeated.

To reactivate the list writer task, press the ATTN key and issue a GO LST command. If this is incorrectly specified, message 1V17A is repeated.

Placing Cards in the Hopper

Place the required cards in the hopper of the punch, ready the punch, press the ATTN key, and issue a GO PUN command to reactivate the punch writer task.

Output to a Diskette Device

If the above messages are displayed while output is being written to a diskette device, to be printed or punched at a later time, it is advisable to note what types of forms or cards are required at the time the final output is to be produced.

To reactivate the list or punch writer task, press the ATTN key and issue a GO LST or GO PUN command.

Error Recovery Procedures

VSE/POWER with RJE,SNA recognizes two categories of errors while receiving input from or transmitting output to a 3770 terminal: permanent and temporary errors.

If a permanent error occurs, the terminal session, or even all RJE,SNA activity, is stopped. If a temporary error occurs, only the currently active processor is stopped in such a way that another processor can be started.

Data integrity is maintained by re-queuing job output or by discarding a partially entered job.

The central operator can stop any session with any terminal either immediately or after the active job has been allowed to complete.

If the need arises for the terminal operator to stop whatever activity is going on at his terminal, he can do so by:

- Pressing the CANCEL key to terminate a read, print, or punch activity, or by
- Pressing the STOP JOB key or, in case of an emergency, by
- Pressing the RESET key to terminate a session.

Error Recovery when Transmitting from the Terminal

If a temporary error is detected while receiving data from a 3770 terminal, VSE/POWER stops the input processor and tries to display the message:

```
1V24I RDR TERMINATED REASON=xxxx FOR luname
```

where xxxx is replaced by system sense information (in hexadecimal notation) copied from the SSENSEI field in the RPL; 2001 is inserted for a sequence error, 2002 if a chain error was detected by VTAM.

If xxxx is replaced by 1001, 1002, 1003, 1008, 2003, or 4009, VSE/POWER detected a specific temporary error at the terminal. For an explanation of the reason codes, refer to the section “PIU Formats” in *ACF/VTAM Debugging Guide* A brief description of sense data is provided in Appendix B of this book.

In both cases, VSE/POWER stops the input processor and places the terminal into the contention state. You may try to start the impacted job again or continue with another job.

To find out which job was the last one that was successfully read, display your reader queue.

VSE/POWER may detect one additional error condition, namely an end-of-file condition signaled by a 3770 terminal while no VSE or VSE/POWER job delimiter has been received. If that condition occurs, VSE/POWER adds a valid job delimiter, places the job in the hold queue, and subsequently displays the message:

```
1V25I EOJ ADDED FOR jobname jobnumber
```

on the terminal's console printer. The terminal operator can either make the job available for processing by issuing a RELEASE command, or delete the job from the queue by issuing a DELETE command.

Error Recovery when Receiving at the Terminal

Three different situations, each of which may require certain actions on your part, can be distinguished:

1. The console printer, line printer, or card punch enters a not-ready state without the loss of output data.
2. The console printer, line printer, or card punch enters a not-ready state with loss of output data.
3. VTAM-detected errors; the permanent errors being signaled by VTAM through VSE/POWER.

Explanations and Actions for Situation 1: The CONSOLE, LINE PRINTER, or PUNCH indicator is turned on. A reason code is displayed in the terminal's numeric position readout (NPR) window. The terminal waits approximately four minutes for you to ready the device. However, by setting the HOLD PRINT switch to ON, you can extend the terminal-waiting time indefinitely.

The output processor will resume the transmission of output data:

- After you ready the device before the time has elapsed.
- When you set the HOLD PRINT switch to ON before the time interval has elapsed: after you ready the device and switch the HOLD PRINT switch to OFF again.

If you ready the device after the allotted time interval has elapsed (the HOLD PRINT switch is not ON or not set to ON before the end of the time interval), you are required to take special action:

- For list and punch output, VSE/POWER prompts you to enter a RESTART command by displaying the message

  ```
  1V18A REPLY WITH RESTART ON INTERVENTION REQUIRED task
  ```

If you enter a RESTART command that does not specify a forward or backward count, the normal default restart value applies, that is, the output processor will restart from the beginning of the output entry that was interrupted.

Notes:

1. Before entering the RESTART command, you must press the ATTN key.
2. If the program's list output does not contain a skip to channel 1, restart will always be from the beginning of the current job if you specified a restart backward from the point of interruption.

- For message output, VSE/POWER sends again the request unit that could not be displayed because the not-ready condition occurred. Thus one or more previously displayed messages may be displayed again after the device has been made ready.

Note: The list or punch processor is terminated whenever “Intervention Required” is received while VSE/POWER is sending an FMH. In addition, if the FMH being sent indicates EDS or ADS, the whole session for that LU is terminated.

Explanations and Actions for Situation 2: If the device enters a not-ready state with loss of data, VSE/POWER's action is as described for case 1 above (there is no waiting time, however).

Explanations and Actions for Situation 3: VTAM-detected errors fall into three categories:

- Those errors for which VTAM sets RTNCD and FDBK2 codes of 4-4 or 12-13 in the RPL (see *VTAM Resource Definition Reference*). When the accompanying sense information identifies an error condition that VSE/POWER can resolve internally, no message is provided.
- Errors for which VTAM also sets RTNCD and FDBK2 codes of 4-4 or 12-13; the accompanying sense information, however, denotes a permanent error. In this case, VSE/POWER either terminates the outbound processor (and displays message 1V24I) or it immediately terminates the terminal session (and displays message 1V07I), depending on the nature of the error code.
- Errors for which VTAM sets RTNCD and FDBK2 codes other than 4-4 or 12-13 are determined as being permanent errors. They cause VSE/POWER to terminate the session immediately, to display message 1V07I on the central operator's console printer, and to attempt to send message 1V13I LOGOFF FORCED to the terminal operator.

Preparing for a Terminal Session

The following procedure provides step-by-step instructions that enable you to set up the terminal for a session with VSE/POWER RJE,SNA.

The 3770 terminals use the Extended Binary Coded Decimal Interchange Code (EBCDIC). The ASCII feature is available in the United States of America and in Canada.

Terminal Status

Two different cases must be considered:

- Power is turned off.
- A previous session has been completed; the terminal is in communication mode with the PROCEED and STANDBY indicators on.

In the first case, proceed as follows:

1. Turn off the operator panel switches HOLD PRINT, EXTEND/ALARM, DISK, AUTO, UPDATE/MONITOR, INTRP, and PUNCH, whichever is applicable for your specific terminal.
2. Set the BSC/SDLC switch to the SDLC position.
3. Set the POWER switch to the ON position. The system performs bring-up tests. Wait until the PROCEED indicator comes on; the terminal is in local mode.
4. Define the console's printer margins and tab-stop settings in such a way that tab stops are defined for skip-to-channel commands unless you choose the terminal system's default values. This procedure is contained in the Operating Procedures Guide for the specific terminal.
5. Ready the input/output or diskette devices if they are required for this session.
6. Press the SYS REQ key; wait until the PROCEED, KBD (keyboard), and LINE indicators turn on. The STANDBY indicator may be on when a previous session has been terminated.
7. Enter your LOGON or SIGNON command or any other USS-generated simplified LOGON command.
8. Press the EOM key.
9. For 3776 only, press the START JOB key, S08 and EOM key.

In the second case, proceed as follows:

1. Turn off the operator panel switches, as mentioned in step 1 above.
2. Do steps 4 through 8 as above (steps 4, 5, and 9 only if necessary).

Transmitting Input

Entering Commands from the Console/Keyboard

After entering a single command from the console/keyboard, press the EOM key. When entering more than one command, enter a carriage return after every command but the last one, which should be delimited by pressing the EOM key.

If the terminal is printing, punching, or writing to a diskette device at the time you want to enter your commands, press the ATTN key to suspend output processing. Wait until the PROCEED and STANDBY indicators come on (all buffers in the network are emptied before the request is honored). You can then enter your commands.

After you have pressed the EOM key, the terminal returns to communication mode or resumes printing or punching the suspended data set.

Entering Card Input Data

Both data and commands can be entered from the card reader. User data must be delimited by either VSE or VSE/POWER job entry delimiter statements, that is, either by // JOB and /& statements or by * $$ JOB and * $$ EOJ statements.

A VSE/POWER job may include one or more VSE job entries as shown in Figure 3.

```
* $$ JOB
// JOB A
// EXEC PGM
   .
   data
   .
   .
/*
/&
// JOB B
   .
   .
/*
/&
* $$ EOJ
```

Figure 3. Card Input Data Example

Place the cards in the card reader and start a reader-to-line job. For detailed information, refer to the Operating Procedures Guide of the specific terminal.

Note: VSE/POWER with RJE,SNA does not support the data compression feature for card input data.

Entering Terminal Operator Commands from the Card Reader

VSE/POWER RJE,SNA terminal operator commands, when entered from a card reader, are only recognized as such if they are submitted outside VSE/POWER job boundaries; if not, they will be treated as user data.

If the terminal is printing or punching when you want to enter data and/or commands from the card reader, press the ATTN key to suspend output processing. Wait until the PROCEED and STANDBY indicators are set.

After the card reader has reached end-of-file, the terminal returns to communication mode or resumes printing or punching the suspended file.

Entering Data and/or Commands from the Diskette Device

You can enter your data and commands from the integrated diskette storage device of the 3773 terminal after it has been loaded in an offline job, or by using a diskette data entry station, for example the IBM 3742. In the last case, the diskette must be initialized as basic exchange diskette and the record length must not exceed 128 bytes.

VSE/POWER RJE,SNA terminal operator commands, when written onto a diskette, should have exactly the same format as when they are entered directly from the console/keyboard. If mixed with data, the commands must be submitted outside VSE/POWER job boundaries.

A record length of up to 128 bytes is allowed for terminal operator commands, VSE/POWER JECL and VSE JCL statements, but only the first 72 bytes of a record are usable. The remaining bytes must be blank. If the terminal is printing or if output is being written to the diskette when you need to enter commands from the diskette:

1. Press the ATTN key to suspend output processing
2. Wait until the PROCEED and STANDBY indicators come on
3. Press START JOB
4. Enter the character S
5. Press 4 and 0 (disk to line)
6. Enter the file name and press EOM

After the data has been transmitted, the terminal resumes the suspended output operation.

Requesting Output

Output to a 3770 terminal can be in the form of:

- Print data
- Punch data
- Messages, displayed on the console printer
- Diskette output data

Note: If urgent input is waiting for transmission to the central installation, print and punch operations can be suspended. The procedure is described in “Suspending Output for the Transmission of Input” on page 35.

Print Data

Print output is sent to a terminal only when solicited by the terminal operator. To receive your output, enter a START LST or START LST,class command (* .. START LST or * .. START LST,class if entered from the card reader). If the output is to be routed to a diskette device, set the DISK switch on before entering the START command. Press the EOM key. When the outbound processor has finished transmitting the output, the terminal returns to the PROCEED state and stays idle until further output becomes available, and the terminal is ready to receive it. If you do not want to receive any additional output, enter a STOP LST,EOJ (* .. STOP LST,EOJ) command.

If your terminal configuration includes an IBM 3784 Line Printer, it is advisable to have the PRMT generation macro, specifying your remote ID, coded with the CONSOLE=YES parameter. If the DISK switch is set on, print output will be written to the diskette device.

If no line printer is available, it is advisable not to specify the CONSOLE parameter (the default is NO) so as to have all messages transmitted to your terminal, printed at job boundaries, instead of having the print output on the console printer interspersed with messages.

Punch Data

Like print data, punch output is not sent to a terminal unless solicited by the terminal operator. To receive your punch output you must enter a START PUN,class command.

When the outbound processor has finished punching the output, the terminal returns to the PROCEED state and stays idle until further punch output becomes available, and the terminal is ready to receive it. If you do not want to receive any additional punch output, enter a STOP PUN,EOJ command.

Punch output is transmitted as transparent data, unless the ASCII feature is used.

Punching output is interrupted when a message destined for your terminal is generated. After the message has been printed, punching of the output is resumed.

Diskette Output Data

If a diskette output device is available and the print output is to be routed to that device to be printed later, set the DISK switch on before entering the START LST command. When the output processor has finished writing the output of the class or classes you specified in the START command, the terminal returns to the PROCEED state and stays idle until further output becomes available, and the terminal is ready to receive it. If you do not want to receive any additional print output, enter a STOP LST,EOJ command.

Messages

Any message uniquely destined for your terminal is displayed at VSE/POWER print job boundaries. If CONSOLE=YES was specified in the PRMT macro for the terminal user who is logged on, print output is interrupted to display the message, after which the print operation is resumed. Punch output is always interrupted immediately.

ALLUSERS-type messages are queued in a separate ALLUSERS message queue (with a maximum of 16 entries), available for all terminal users upon request. To get the messages displayed on your console printer or display, enter a DISPLAY MSG command (* .. DISPLAY MSG, if the command is entered from the card reader).

Notes for RJE,BSC Users of the IBM 3770

The following applies if you are using a 3776 in BSC 2770 or 3780 mode.

1. Always press the SYSTEM REQUEST key before entering operator commands from the keyboard.
2. Print data can be sent to diskette in the following manner:

   TYPE=3780 specified in the PRMT macro:

   - CSALST=DC3, CS=YES, and CSAMSG=DC1 specified in the PRMT macro.

     Note: If CSAMSG is omitted, messages are written to diskette also.

   - Disk switch in ON position and no CS operand specified in the PRMT macro.

   TYPE=2770 specified in the PRMT macro:

   - CSALST=DC3 and CSAMSG=DC1 specified in the PRMT macro.

Note: If CSAMSG is omitted, messages are written to diskette also.

3. Punch data can be sent to a diskette in the following manner:

   TYPE=3780 specified in the PRMT macro:

   - CSAPUN=DC3 and CS=YES specified in the PRMT macro.
   - CSAPUN=DC2 and CS=YES specified in the PRMT macro and disk switch in ON position.
   - Disk switch in ON position and no CS operand specified in the PRMT macro.

   TYPE=2770 specified in the PRMT macro:

   - CSAPUN=DC3 specified in the PRMT macro.
   - Disk switch in ON position.

4. If your terminal encounters a line-to-line printer condition without printing, and this condition cannot be reset by pressing the CODE and START JOB/STOP JOB keys, do the following:

   - Press the SYSTEM RESET key on the auxiliary operator panel
   - From the auxiliary operator panel start a line-to-line printer job (S08)
   - Press the EOM button on the auxiliary operator panel

5. If 3780 mode is being used, the EXTENDED BUFFER switch must be set to ON (512 bytes). If 2770 mode is used, the EXTENDED BUFFER switch must be set to ON if ABE=YES was specified in the PRMT macro. If ABE was not specified, then BE=YES must be specified, and the EXTENDED BUFFER SWITCH must be set to OFF (256 bytes).

IBM 3780 Terminal Operation

The IBM 3780 Data Communications Terminal, referred to in this manual as the 3780 terminal, includes a card reader, a printer, and an operator control console. Optionally, it may also include a card punch. For a detailed description of these terminal components, refer to *Component Information for the IBM 3780 Data Communication Terminal* where instructions on such topics as exchanging forms on the printer, removing a card jam, or establishing telephone connections are also discussed.

This procedure provides step-by-step instructions that enable you to set up the terminal for, and control RJE under, VSE/POWER.

Transmitting Input

If the switches of your terminal were set up during a previous VSE/POWER RJE session, you can omit steps 2 to 5. As soon as you turn the power on, the console lights indicate some of the switch settings.

1. Turn on the power switch at the control unit. If power is already on, set the OFFLINE switch to OFFLINE, then press TERMINAL RESET.
2. Set the TERM MODE switch on the console to LINE.
3. Set the ANSWER switch on the console to MANUAL.
4. Turn off the INQUIRY MODE switch on the console.
5. Turn on the AUTO RESTART switch.

6. At the card punch: remove cards, press NPRO, then place blank cards in the hopper and press START.
7. Press CARRIAGE RESTORE on the printer to align forms and press START.
8. Press NPRO (non-process run-out) on the card reader to flush cards.
9. Place your SIGNON card, followed by as many additional terminal commands as may be required and by job input cards, into the hopper of the card reader.
10. Set the terminal offline. Press CHECK RESET and TERM RESET on the console. Set the TERM MODE switch back to LINE.
11. If transparent data is to be transmitted or received, turn on the TRNSPCY switch on the console. Do not change from transparent to nontransparent while reading. The transparency feature is briefly discussed in the introductory paragraphs of the procedure for the 2770 terminal.
12. If the space compress feature is available, turn on the SPACE COMPRESS EXPAND switch on the console. Note that this feature is only active in nontransparent mode.
13. Set the EOF (End-of-File) switch to ON and press START on the reader panel to ready the card reader.
14. For a switched line, dial the number and switch the data set to data mode. The actual procedure depends on the type of data set at your location and can normally be found in the operator's instructions for the data set.
15. Press START on the console to transmit data.
16. The alarm sounds when the last card in the hopper has been read and transmitted.

Requesting Output

The instructions given below assume that a START LST command, or a START PUN command, or both have already been transmitted.

When print or punch output is available for transmission to your terminal and the output device is not in the ready state, the alarm will sound. Then proceed as follows:

1. Correct error indicators on the printer and/or punch according to error recovery procedures described in *Component Information for the IBM 3780 Data Communication Terminal*
2. Set the terminal offline. Press CHECK RESET and START on the console. Set the TERM MODE switch to LINE, to return the terminal to the ready state.

The end of output is signalled by the audible alarm, at which time you may submit more input. “Preparing More Input” on page 45.

If it is necessary to submit more input while output is in progress, discontinue the output (see “Discontinuing Output” below).

Discontinuing Output

If possible, prepare your input before interrupting an output operation. A terminal is not allowed to remain idle indefinitely, and when the time limit set during VSE/POWER generation has been exceeded, sign-off is forced. For a switched line, this means physical disconnection.

Discontinuing output at a terminal may be desirable if output is being received, and urgent input is waiting to be transmitted. However, before you actually interrupt the output operation that is in progress, prepare your input job stream and place it into the hopper of the card reader.

To ensure that no records are lost when you interrupt an output operation, proceed as follows:

1. Press STOP on the output device. This makes the currently active output device “not ready”. Do not use a printer or punch check as a pause to read cards; missing or duplicate output may occur.
2. Wait for the alarm to sound.
3. Ready the output device again and press START. The records remaining in the buffer will be printed/punched in a short burst. Then a pause of 15 seconds follows:

   If you do not take any action, output processing will continue (on a blank line if HFC has been generated) after this pause. If you want to use the reader:
4. Before the end of the pause, press the TERM RESET key.
5. Make the card reader ready.
6. Press the START key at the terminal.
7. The system will start reading cards.
8. Make sure that the output device is ready if you want to continue output processing.

Special Forms Output

If the programmer has specified special forms in his * $$ LST or * $$ PUN statement and the output is ready to be transmitted, the central system sends a message indicating the required forms or cards. Then proceed as follows:

1. Mount the requested forms on the printer or place the requested cards in the hopper of the punch.
2. Transmit a GO command.

When the central system receives the command, VSE/POWER RJE continues transmitting the output.

Preparing More Input

1. While output is being printed or punched, you may load and ready the reader to send more input. If you ready the reader after output has been completed, you must do so within the time limit defined for your terminal.
2. The input will be transmitted after end of job has been detected.

Note: If possible, prepare additional input before the terminal reaches the end of its current input or output operation. A terminal is not allowed to remain idle

indefinitely, and when the time limit set during VSE/POWER generation has been exceeded, sign-off is forced. For a switched line, this means physical disconnection.

Error Recovery Procedures

When a permanent I/O error occurs on an RJE line, the central system will stop the line. The central system operator will have to start the line again after the cause of the error has been removed. When a timeout occurs, the system will perform sign-off processing.

Nonpermanent line errors, such as data checks or lost data, do not cause an RJE line to be stopped. If errors of this type occur, the system keeps retrying until either the operation is completed successfully or intervention occurs at the terminal.

Nonpermanent line errors may occur when, for example, you are known to VSE/POWER as the user of a 3780 terminal but you attempt to sign on at a 2770 terminal. In this case, the existing terminal features do not match the defined terminal features. An I/O trace may be useful in determining the cause of nonpermanent line errors (ask your programmer for instructions).

Most of the problems that you may encounter will result in indicator lights being turned on, either on the 3780 console or on the I/O device concerned. Some of these lights are not error indicators, but they help to diagnose the error situation. For example, if the terminal stops after the SIGNON command has been transmitted and the DATA IN BUFFER indicator is on, the system is possibly trying to warn you that your SIGNON command is invalid. These lights, referred to as status indicators, are: DATA SET READY, CARRIER OFF, DATA IN BUFFER, LINE MODE, OPERATE, BID, TRNSPCY, MANUAL ANSWER.

All indicator lights are explained in detail in *Component Information for the IBM 3780 Data Communication Terminal*, where error recovery procedures for rare problems not discussed here are also described. The procedure described here addresses errors which you might be confronted with at your terminal while it is transmitting input and receiving remote job output.

Error Recovery when Transmitting from the Terminal

READER (flashing).

This arises for any problem that occurs while the card reader is transmitting input. Other lights on the card reader give you an indication of the type of problem. These additional lights are discussed below.

FEED CHECK.

The bottom card in the hopper failed to feed. Remove the cards in the hopper and press NPRO. Check and, if necessary, re-punch the cards that failed to feed; make sure the card throat is clear. Press START on the reader and on the console.

ATTENTION.

Possible causes are: full stacker, empty hopper with the EOF switch off, or cover open. Correct the error condition, then press START on the reader and on the console.

READ CHECK.

The card in the read station is invalid, or there is a card jam in the read station. The last card in the stacker (if there is no jam) and the following card (which is run out by pressing NPRO after the cards in the hopper have been removed) must be read again. After appropriate corrective action, place these two cards in front of the cards in the hopper and press START, first on the reader and then on the console.

If, as a result of a severe card jam, you cannot determine the correct order of the affected input cards, attempt a job restart (see “Job Restart” below).

TERMINAL ADDRESS.

VSE/POWER tries to send output while you are attempting to start transmission of input. Continue with your input procedure until the BID light goes on; press CHECK RESET and wait for input to begin. If TERMINAL ADDRESS goes on again, press CHECK RESET a second time.

If you are unable to start transmission of input, you may have interrupted transmission of output from the central system to the terminal. If so, make the printer (or punch) ready to accept the output and wait until the end of the job output before you attempt to transmit input again.

BID RETRY.

VSE/POWER failed to respond to your terminal within 15 to 45 seconds (the exact time depends on the wiring option selected for your terminal). Attempt a job restart (see “Job Restart” below). If any cards are in the stacker, a duplicate block of data will probably be sent.

INPUT CHECK, BUFFER CHECK, TRNSPCY CHECK.

When any of these lights are on, attempt a job restart (see “Job Restart” below). If your input decks include cards that may contain any of the 256 EBCDIC punch codes, be sure the TRNSPCY switch is on.

RECORD CHECK or LINE CHECK.

Either of these lights or both may go on when VSE/POWER attempts re-transmission after a line error. These lights go off if the retry operation is successful. If the lights remain on and transmission does not proceed, attempt a job restart (see “Job Restart”).

Job Restart

To restart a job, do the following:

1. Place a /& card (* $$ EOJ if JECL is used) into the hopper, followed by a DELETE command and the original input cards for the job.
2. Follow steps 13, 15, and 16 of the procedure under “Transmitting Input” above.

Error Recovery when Receiving at the Terminal

PRINTER (flashing).

This occurs for any error condition on the printer while output is being received. Additional lights on the printer give you an indication of the type of problem. These additional lights are discussed below.

FORM CHECK, END OF FORM, CARRIAGE INTERLOCK.

These indicators are turned on by conditions such as carriage tape not mounted, forms jam, or printer carriage not ready. Correct the condition and then press:

1. RESET on the printer
2. CHECK RESET on the console
3. START on the printer
4. START on the console

Other CHK lights. The printer has had a parity error or some other hardware malfunction. For a detailed discussion of these lights, see *Component Information for the IBM 3780 Data Communication Terminal*

When you attempt recovery from any of the above printer errors, print lines may be lost. To retrieve lost output, you can submit an appropriate RESTART command.

CHECK or **card-punch-not-ready condition**.

Possible causes are hopper empty, stacker full, or card jam. Do this:

1. Remove all cards from the hopper and press NPRO to run out the remaining cards in the feed.
2. Remove the cards from the stacker and discard the last n+m cards, where:
   - **n =** Number of cards indicated by the CTR lights.
   - **m =** 1, if any or all of the CTR lights are on together with the I/O BFR FULL light.
   - **m =** 2, if all CTR lights are off, and the I/O BFR FULL light is on or off.
3. Place blank cards into the hopper again and make the punch ready.

The first card that feeds into the stacker after error recovery is blank. Discard this card.

During recovery from a punch error, punched output records may be lost. To retrieve these records, enter a STOP PUN command and start the punch again by a subsequent START command.

The following console lights may also require your attention while the terminal is receiving output from the central location:

TERMINAL ADDRESS.

VSE/POWER RJE is attempting to transmit output to your terminal, but the printer at your terminal is not ready. Make sure that all switches at your terminal are set correctly, ready the printer, and press CHECK RESET on the console, press START on the printer.

If one or more duplicate lines are printed, then:

- Press STOP and RESET on the printer
- Press START on the printer.

The line in error will be reprinted.

OVERRUN.

This light usually indicates that specific features of the 3780 terminal were incorrectly specified during VSE/POWER support generation, or that you signed on using the remote ID of one terminal for another terminal. Ask the central operator to help you correct the discrepancy; he may have to stop and restart the line so that you can sign on with the correct remote ID.

BUFFER CHECK.

Have the central operator stop the line and restart it.

LINE CHECK.

VSE/POWER is attempting a re-transmission. If this re-transmission is successful, the light is turned off. If the light remains on and output does not continue within a short time, attempt a job restart by submitting a RESTART command.

IBM 3790 Workstation Operation

The IBM 3790 Communication System, referred to in this manual as the 3790 or the workstation, differs from the normal RJE terminal operation in that it is comprehensive in its concept, allowing both several different terminals to be attached to it and various RJE sessions called LUs to operate through the 3790 system in communication with the host system (IBM System/370 or IBM 4300 processors).

Users of the 3790 should refer to the *Operations Guide for the IBM 3790 Communication System* (hereafter referred to as the *3790 Operations Guide*) for general handling and RJE procedures. Individual terminal operating instructions are contained in *IBM 3790 Communication System:*
Operator's Guide for the IBM 3793 Keyboard Printer, and *IBM 3790 Communication System:*
Operator's Guide for the IBM 3277 Display Station

Important functions are:

- Concurrent Device Operation

  Concurrent operation of one inbound card data stream, one inbound or outbound message, and up to three outbound printers.

- Host-to-3790 Compaction

  Compaction is a method for reducing the amount of data to be transmitted. It improves communication line utilization beyond the improvements achieved by compression. Compaction is supported for printer data only.

- Remote Data Spooling

  VSE/POWER supports the transmission of a Peripheral Data Stream Information Record (PDIR) that provides information pertinent to the job output requirements, such as a forms ID or the number of copies to be produced.

The benefits for the user result from the fact that functions are taken from the host processor to the workstation. For example, multiple copies of one data stream need to be transmitted only once.

A physical card reader does not exist. Instead, the 3790 uses a symbolic reader concept called “logical reader,” which means that card data is stored on the disk on the 3791 controller and appears as card or exchange media data to the host system when received. Off-line storage on diskette is available for data (job input for the host) and job output. Likewise, the symbolic printers at the 3790 are referred to as “logical printers.”

Startup Procedure - LOGON

For a detailed explanation of the steps involved in the following instructions, refer to the *3790 Operations Guide* To start up the 3790 RJE function, do the following:

1. Turn on the 3791 and initialize.
2. Log on as the control operator.
3. Enable communication with the host.
4. Log on as the RJE operator.
5. Do the following:
   - Enable the RJE function.
   - Proceed as follows only during system installation:

     Enter the LU description for the individual LUs. The operator will be prompted to enter the following information required from the VSE/POWER generation specifications (for details see *VSE/POWER Administration and Operation*):

     – * ENTER MODE NAME:

       Reply with the logmode table name.

     – * ENTER HOST APPLICATION NAME:

       Enter the “application-id” value specified in the SNA parameter of the POWER macro.

     – * ENTER USER DATA:

       Reply here with the same information as required in the DATA parameter of the LOGON command of VSE/POWER RJE (remote ID, password, and user information).

       Note: This step of entering the LU definition need not necessarily be executed for every LOGON. For details, see *3790 Operations Guide*.

   - Log on the LU(s)

Note: The VSE/POWER RJE SIGNON command and the VTAM LOGON command may not be used on the 3790.

Entering VSE/POWER RJE Commands

As a user of an IBM 3790 Communication System, you may enter VSE/POWER commands in one of the following ways:

1. From either the 3793 Keyboard/Printer or the 3277 Display Station.
2. From the disk of the 3791 Controller. In this case, the commands have been stored in a transmit file, which is interpreted as data from the logical reader when received by VSE/POWER.

To enter the commands from the RJE operator terminal (either the 3793 or the 3277) after the startup procedure, select the RJE function option-group for processing RJE commands, and enter the command after VSE/POWER prompts you with “ENTER COMMAND.”

To enter a command from the logical card reader (in the 3790 terminology, this is referred to as the “transmit data set”), have the command start with * .. and send or insert a command (or a command sequence) only at VSE/POWER job boundaries.

Receiving VSE/POWER RJE Messages

After the startup procedure, the RJE operator may receive messages whenever his session is running under the option that enables him to send commands. VSE/POWER RJE messages will be presented on the RJE operator terminal after the next RJE command has been entered. To receive a message without entering a command, first bring the 3790 into the correct status for entering the command, and then press the ENTER key without typing a message on the keyboard.

Transmitting to the Central System (Hot Reader)

To transmit data (jobs) to VSE/POWER, you must first have prepared the data (along with any RJE commands inserted at VSE/POWER job boundaries) by creating an RJE transmit data set.

Once the RJE transmit file exists, the RJE operator may send it to the host using the 3790 RJE transmit command.

The transmitted data is immediately read in by VSE/POWER. No VSE/POWER RJE commands need to be entered by the 3790 RJE operator once he has successfully logged on his session to begin transmission. This gives the user a “hot reader” facility.

Note: Job control and JECL statements must be entered in uppercase characters.

Receiving Output from the Central System

To start a flow of data from VSE/POWER to the 3790, start a VSE/POWER list task (using the START command) for the job or jobs you wish to transmit. At the 3790, attach a printer to print the list output. It is also possible to store the print output on the disk in the 3791 controller or to store it offline on diskettes.

The 3790 remote operator has the possibility to display spool jobs or output currently resident on his disk. The following is a sample of such a display:

```
SEE SYSRJE OPTION GROUP 1 -- 5
SEE SYSRJE OPTION GROUP 5:3:2
LIST OF ALL SPOOL JOBS
 JOB NAME   LINE COUNT   COPIES
04R30CTAAA     264          1
05R30CTAAA     264          1
```

The line count shown in the display does not contain the count of lines produced by the use of job separators. If the transmission has been flushed, then the line count shows the number of lines which the complete output contained and not the number which had been transmitted before the flush.

Routing of List Output

The VSE/POWER support for the 3790 allows much flexibility in the routing of job print output. Figure 4 on page 53 shows the RJE list output routing.

- The RJE operator selects the jobs to be received from the host system by specifying the appropriate output class in the START LSTn(,class) command.
- Additionally, the RJE operator selects the output device by means of 3790 commands (for example, see the description of the * ATTACH command in the *3790 Operations Guide* The desired line printer is identified by its logical device address.

Notes:

1. If two or more copies of a print output are requested, VSE/POWER bypasses the line printer specification and the output is spooled to the 3790 disk. Instead, one copy of the print output is routed to the disk in the 3791, from where it can be printed as many times as required. This process is used to optimize line use and transmission time. An example of the routing of list output is illustrated in Figure 4 on page 53.
2. There is a fixed relationship between list tasks and the 3790 symbolic printers: LST1 (or LST) output goes to the printer PTR1, LST2 goes to PTR2, and LST3 goes to the disk (symbolic writer).

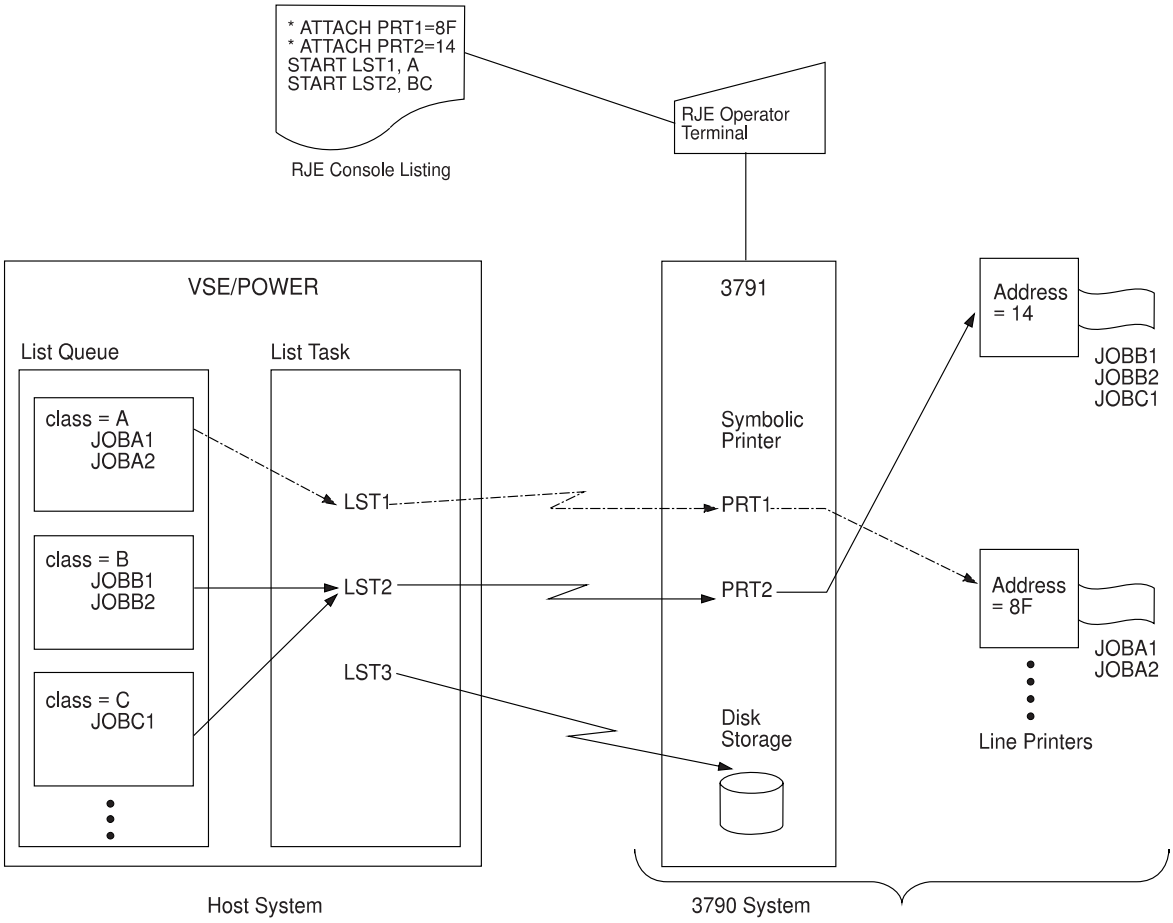


Figure 4. RJE List Output Routing

Spooling of List Output

Print output can be stored on the disk of the 3791 Controller. This occurs whenever print output is routed to the 3790 using a START LST3 command, or whenever two or more print copies are requested, regardless of the specified line printer.

Hot Writer Facility

Once the START command has been entered for a VSE/POWER list task with its corresponding class or classes, all print output is sent immediately to the 3790 whenever job output is ready for printing and a printer and a session are available. The logical printer will remain ready for immediate processing after the given output class or classes have been emptied, and will begin automatically when the next job output has been placed in the same class. This facility remains in effect until output has been discontinued. See “Interrupting or Discontinuing Output from the Host” on page 55.

Interrupting Data Flows

It is possible to interrupt the flow of output from the central system, either for RJE,SNA commands or for logical card input. Furthermore, logical card input may also be interrupted to send an RJE,SNA command. No specific action is required on the part of the operator to perform these interrupts. He only needs to perform the steps as usual to enter an RJE,SNA command or to begin the transmission of an RJE transmit data set. The 3790 Communication System performs the necessary actions to interrupt the ongoing transmission.

Special Forms Output

To mount special print forms or a print belt, or to perform other types of specific output handling for one or more jobs, the list output should first have been grouped into classes with every class representing printout that requires the same handling procedures.

The next two steps can follow in either order:

- Prepare the printer and then ready it.
- Start a list task for that class or those classes (see START command with the proper list task assigned (LST1 or LST2) corresponding to the line printer where output will take place).

If these steps are performed in reverse order, then the RJE operator will be prompted following the START command to attach the printer and ready it.

For example:

```
ENTER COMMAND:
  start lst1,bcde            (VSE/POWER START command)

ENTER COMMAND:
  *960C-ATTACH PRINTER TO PTR1

ENTER COMMAND:
  *at ptr1=14
  *ATTACHED DEVICE FOR PTR1
  *9602-SET UP FORMS AND BELT ON PTR1

ENTER COMMAND:
  *s ptr1                    (Output begins on line printer 1)
```

The above procedure assumes that multiple list output was not specified for any of the jobs. If two or more copies were specified, then the list output would be automatically spooled to the disk.

Note: The SETUP and GO commands are not valid for the 3790 system. When defining forms on the 3740, it should be noted that VSE/POWER allows form names with a maximum of four characters.

Preparing More Input for the Central System

The 3790 remains ready for continued transmission after the completion of any data transfer. No timeout is initiated by VSE/POWER to break the line and cause a logoff procedure. To continue transmission, you may repeat the steps described in “Transmitting to the Central System (Hot Reader)” on page 51.

Interrupting or Discontinuing Output from the Host

To interrupt or discontinue output from the host, the VSE/POWER commands STOP and FLUSH are available.

The STOP RESTART or FLUSH HOLD command interrupts output with the intention of resuming.

The STOP EOJ command discontinues a task at the end of the current output.

The STOP command discontinues transmission of print or punch output from the host and can be immediate or conditional (STOP,EOJ) upon task completion. A task that has been stopped with the RESTART parameter can be restarted with the START command beginning with the next output record following the last one processed before the STOP command was issued. Otherwise the discontinued output will be printed/punched from the beginning when the output task is restarted.

The FLUSH command discontinues output immediately. The output will be deleted unless the HOLD parameter was specified, or unless the job disposition was specified as “Keep” (K).

You may further discontinue output by logging off the 3790. Refer to the section “Shut-Down Procedures - LOGOFF” below.

Shut-Down Procedures - LOGOFF

Before switching off the IBM 3790, log off all active sessions. The following steps are available:

1. Conditional LOGOFF. This allows an orderly termination of the transmit or receive function. One or all sessions are allowed to continue until they are no longer active before being logged off. The VSE/POWER RJE command SIGNOFF will conditionally log off all sessions of a workstation. The 3790 also offers commands to conditionally log off LUs, either separately or collectively. The VSE/POWER central operator may also conditionally log off an LU or all SNA workstations.
2. Unconditional LOGOFF. This causes immediate termination of the transmit or receive function. This is possible through the use of 3790 commands. The VSE/POWER central operator may also unconditionally log off an LU or all SNA workstations.
3. POWER-OFF or RESET. See the *3790 Operations Guide* A POWER-OFF or RESET by the 3790 operator without a preceding RJE LOGOFF is treated by VSE/POWER as an unconditional LOGOFF request.

The VTAM command LOGOFF is not available to the 3790 user.

Error Recovery Procedures

The 3790 RJE operator must participate in transmission error recovery only when the communication system hardware and/or software determines that intervention is required. Figure 5 indicates the nature of errors and the possible recovery procedures.

Problem Description	Transmission Type		Message Source	Recovery Procedure
	Host Input	Host Output		
Operator intervention required on I/O device -Temporary		X	RJE console message	Restart list task
-Permanent		X	RJE console message	(1) Reassign or repair device (2) Start list task
Operator desires to cancel job	X		RJE console message	Cancel transmission using 3790 commands
		X	RJE console message	Flush or stop list task
Temporary transmission problem	X		RJE console message	Display names of jobs already read in successfully and retransmit missing jobs
		X	RJE console message	Restart list task
Permanent transmission problem (session terminated)	X	X	RJE and VSE/POWER console messages	Log on again (LOGOFF was forced)

Figure 5. IBM 3790 Error Recovery Procedures

Chapter 3. Terminal Operator Commands

The VSE/POWER RJE terminal operator commands are used to control jobs that you enter at a terminal. You can also use them to communicate with the central operator and with other terminal operators. For the rules on how to enter VSE/POWER RJE commands, see “Terminal Operator Commands” on page 5.

Understanding Syntax Diagrams

This section describes how to read the syntax diagrams in this manual.

To read a syntax diagram follow the path of the line. Read from left to right and top to bottom.

- The ►►— symbol indicates the beginning of a syntax diagram.
- The —► symbol, at the end of a line, indicates that the syntax diagram continues on the next line.
- The ►— symbol, at the beginning of a line, indicates that a syntax diagram continues from the previous line.
- The —►◄ symbol indicates the end of a syntax diagram.

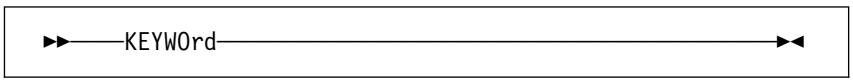
Syntax items (for example, a keyword or variable) may be:

- Directly on the line (required)
- Above the line (default)
- Below the line (optional)

Uppercase Letters

Uppercase letters denote the shortest possible abbreviation. If an item appears entirely in uppercase letters, it can not be abbreviated.

You can type the item in uppercase letters, lowercase letters, or any combination. For example:



In this example, you can enter KEYWO, KEYWOR, or KEYWORD in any combination of uppercase and lowercase letters.

Symbols

You **must** code these symbols exactly as they appear in the syntax diagram

*	Asterisk
:	Colon
,	Comma
=	Equal Sign
-	Hyphen
//	Double slash

() Parenthesis

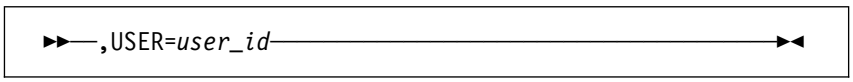
. Period

+ Plus sign

For example:

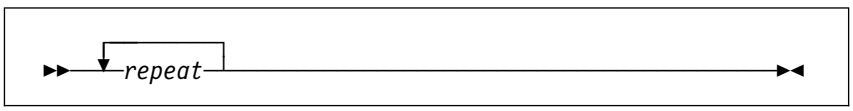
```
* $$ LST
```

Variables An *italicized* lower-case word indicates a variable that you must substitute with specific information. For example:

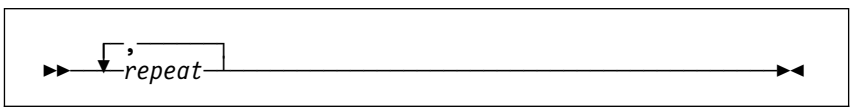


Here you must code `USER=` as shown and supply an ID for user_id. You may, of course, enter `USER` in lowercase, but you must not change it otherwise.

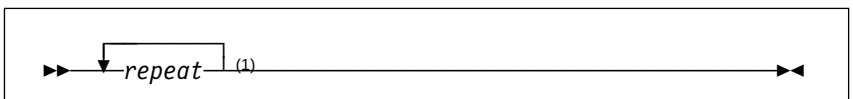
Repetition An arrow returning to the left means that the item can be repeated.



A character within the arrow means you must separate repeated items with that character.

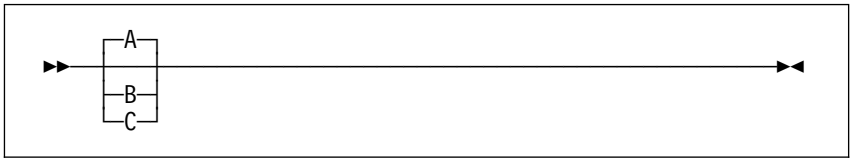


A footnote (1) by the arrow references a limit that tells how many times the item can be repeated.



Note:
[1] Specify *repeat* up to 5 times.

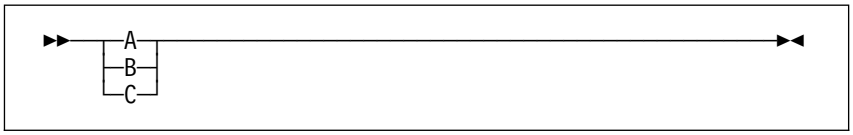
Defaults Defaults are above the line. The system uses the default unless you override it. You can override the default by coding an option from the stack below the line. For example:



In this example, A is the default. You can override `A` by choosing `B` or `C`.

Required Choices

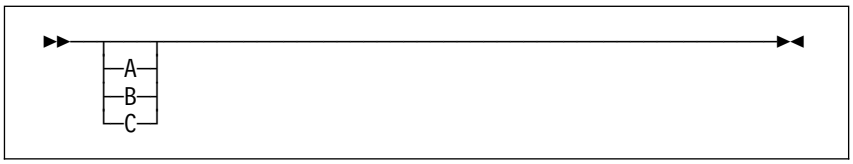
When two or more items are in a stack and one of them is on the line, you **must** specify one item. For example:



Here you must enter either `A` or `B` or `C`.

Optional Choice

When an item is below the line, the item is optional. Only one item **may** be chosen. For example:



Here you may enter either `A` or `B` or `C`, or you may omit the field.

Required Blank Space

A required blank space is indicated as such in the notation. For example:

```
* $$ EOJ
```

This indicates that at least one blank is required before and after the characters $$.

Entering Commands at the IBM 3770

As a user of a 3770 terminal, you can enter your commands in three different ways depending on the terminal configuration (see Figure 6 on page 60 for a summary):

1. You can enter commands at the terminal keyboard (all 3770 models). If LST output is being routed to the console printer, make sure that the printer page has been advanced before typing commands.
2. You can enter commands via the card reader, except the LOGON, LOGOFF, and SIGNON commands, because the System Request key must be pressed before entering these commands.
3. You can enter commands via a diskette device, except the LOGON, LOGOFF, and SIGNON commands, after you have stored the commands on the diskette in a previous offline operation.

Type of Terminal	Commands entered via			
	Keyboard/ Printer	2502 Card Reader	3501 Card Reader	Diskette Storage
3771	X		X	
3773	X			X
3774	X	X	X	X
3775	X	X	X	X
3776	X	X	X	X

Figure 6. Entering Commands at an IBM 3770 Terminal

RJE Command Overview

Most VSE/POWER RJE terminal operator commands belong to one of the following four groups:

- Terminal control commands
- Task management commands
- Queue management commands
- System control commands.

To help you see at a glance which commands belong to which group, the following table lists each command according to the group it belongs and gives a brief description of what the command accomplishes. A detailed description of every command, arranged alphabetically and including a discussion of the operands, appears on the following pages.

Usage Note:

To avoid unpredictable results, task management commands should be allowed to complete before the next command is issued.

Figure 7 (Page 1 of 3). IBM VSE/POWER RJE Terminal Operator Commands

Command Type	ID	Command	Short Form	Command Description
Terminal Control		LOGON		Starts an RJE,SNA session; see (1).
		LOGOFF		Terminates an RJE,SNA session; see (1).
	* ..	SIGNON		Starts an RJE,BSC terminal session under VSE/POWER.
	* ..	SIGNOFF		Terminates an RJE,BSC terminal session under VSE/POWER.

Figure 7 (Page 2 of 3). IBM VSE/POWER RJE Terminal Operator Commands

Command Type	ID	Command	Short Form	Command Description
Task Management	* ..	START	S	Starts an RJE writer task or start sending messages to the terminal.
	* ..	STOP	P	Stops an RJE writer task or stop sending messages to the terminal.
	* ..	GO	G	Reactivates an RJE task waiting for an operator response; see (2).
	* ..	CANCEL	C	Cancels a VSE/POWER job in execution.
	* ..	FLUSH	F	Discontinues output processing for the current VSE/POWER job.
	* ..	RESTART	T	Restarts an RJE writer task from a specified point.
Queue Management	* ..	DISPLAY	D	Displays the status of VSE/POWER jobs and of RJE messages.
	* ..	ALTER	A	Assigns new attributes to a VSE/POWER job.
	* ..	DELETE	L	Deletes a VSE/POWER job or an RJE message.
	* ..	RELEASE	R	Makes a VSE/POWER job available for processing.
	* ..	HOLD	H	Puts a VSE/POWER job in hold state.
System Control	* ..	BRDCST	B	Transmits a message.
	* ..	DISPLAY	D	Displays the status of active tasks, of system time, of the currently loaded NDT, of the active Dynamic Class Table, of telecommunication and task tracing, and of loaded user exit routines.
	* ..	INQUIRE	I	Displays RJE line, PNET, or external device status.
	* ..	SETUP	U	Prints setup pages to allow forms alignment; see (2).
	* ..	XMIT	X	Queues a subcommand in a networking environment.

Figure 7 (Page 3 of 3). IBM VSE/POWER RJE Terminal Operator Commands

Command Type	ID	Command	Short Form	Command Description

Usage Notes:

(1) VSE/POWER terminal operator commands must be placed either ahead of the first job entered during a terminal session, between job entries, or after the last job entry of a session.

(2) This command does not apply to the IBM 3790.

When using a 3790 workstation, consider the following items for the use of task management commands:

MLU or MDW workstations -- for example the 3790 terminals -- have the capability to select up to three logical printer devices. Remote operator commands are provided to control and assign classes to these logical printer devices.

The task operand LST of all task management commands listed above is expanded to:

```
task = LST1 (or LST) | LST2 | LST3
```

where LST1 (or LST), LST2, and LST3 specify the three logical printers 1, 2, and 3, respectively. The default for LST is LST1.

For example:

Operation		Operand
START	S	LST3,A
STOP	P	LST2,EOJ
RESTART	T	LST
FLUSH	F	LST2,HOLD

This expansion allows to start, stop, setup, restart, discontinue, and reactivate every logical printer device individually, and to associate up to four output classes with every logical printer device by means of the START command. Default values will be used if no output class is specified.

Command Descriptions

This section contains descriptions for all terminal operator commands. These command descriptions are listed in alphabetical order.

Each of the commands is presented in the following order:

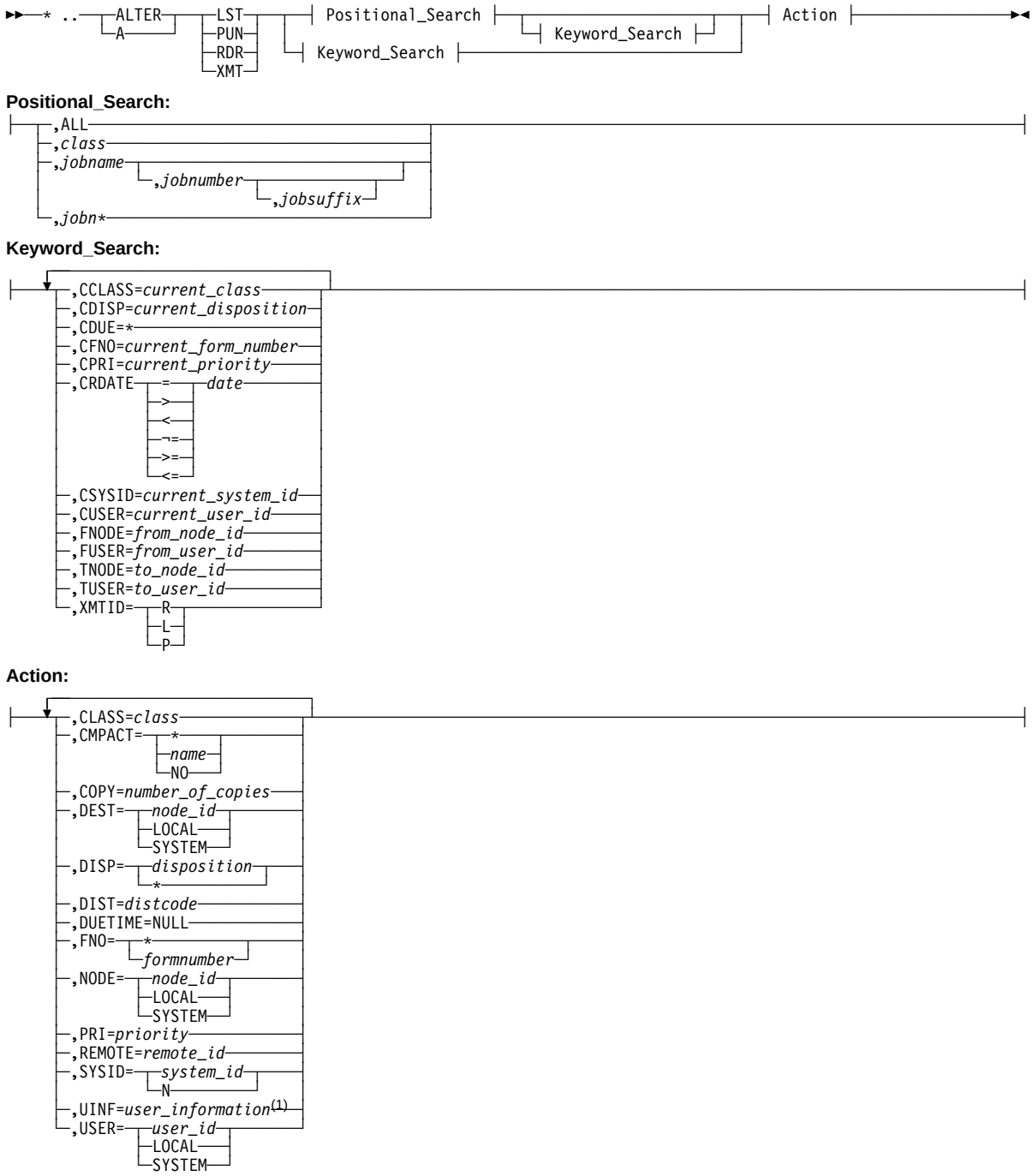
- Command name: identifies the name of the command. This appears on the top of the page for easy reference.
- Description of function: explains how you use the command.
- Command format: lists the syntax of the command with all the possible operands that you can use.
- Operand description: describes the function of each operand and any value that you can include in the operand.
- Examples: gives examples of how you can use the command.

* .. ALTER

The ALTER command changes the attributes of a VSE/POWER job after it has been queued by VSE/POWER. You can use the command to change the attributes of jobs submitted by you or of output routed to you. The operands are the same as those specified in the JECL * $$ JOB, * $$ LST, and * $$ PUN statements and have the same format. Any number of parameters may be modified with one command.

The CMPACT operand allows you to specify a compaction table name or to modify the name specified by the * $$ LST JECL statement. For information on VSE/POWER “JECL” statements, refer to *VSE/POWER Administration and Operation*.

Note: A change of the disposition or the class of a queue entry, may change the sequence of the queue entries. The altered queue entry is added to the appropriate class chain. If the disposition of the queue entry is D or K, the queue entry is added into the dispatchable class chain; if the disposition is L or H, the queue entry is added to the non-dispatchable class chain. The queueing is performed based on priority. Output queue entries with the same forms are grouped together.



Note:

1 If `user_information` contains spaces or single quotes (or apostrophes), it must be enclosed in single quotes. An embedded single quote must then be represented by two successive single quotes.

Specify the queue for which the command is to be executed, in the form:

LST specify LST to alter the list queue.
PUN specify PUN to alter the punch queue.

RDR specify RDR to alter the reader queue.
XMT specify XMT to alter the transmission queue.

Positional Search Operands

ALL

specify ALL to alter either specific attributes for all VSE/POWER jobs in the named queue or just for a certain group of jobs in the queue as defined by one or more additional keyword search operands.

VSE/POWER uses ALL as default only if you specify at least one operand of the group of keyword search operands.

class

requests that attributes for VSE/POWER RJE queue entries with the specified class are to be altered. Any alphameric character from A to Z or 0 to 9 may be specified.

jobname

specifies the name by which the VSE/POWER job is known to VSE/POWER. The jobname may contain 2 to 8 alphameric characters.

jobnumber

specifies the number assigned to the job by VSE/POWER. 1 to 5 digits may be specified. Use the DISPLAY command to determine the correct job number.

jobsuffix

specifies the 1-3 digit job suffix associated with the queue entry to be altered. Specify this operand if only the characteristics of a certain output segment of the named job are to be changed.

jobn*

requests that all VSE/POWER jobs whose names start with the specified characters are to be altered. You may specify up to eight alphameric characters for *jobn*.

Keyword Search Operands

CCLASS=current-class

indicates that the requested change is to be done if the class currently assigned to the queue entry (or entries) matches the specified class. This operand will overwrite a possible specification of the positional 'class' operand. Specification of either 'class' or the 'CCLASS=' operand will expedite the access path to the VSE/POWER queue file.

CDISP=current-disposition

indicates that the requested change is to be done if the disposition currently assigned to the queue entry (or entries) matches the specified disposition.

CDUE=*

indicates that all jobs are to be altered for which time event scheduling operands have been specified. Such jobs can either be in the RDR or XMT queue.

CFNO=current-form-number

indicates that the requested change is to be done if the form number defined for the output of the queue entry (or entries) matches the specified one.

CPRI=current-priority
indicates that the requested change is to be done if the priority currently assigned to the queue entry (or entries) matches the specified priority.

CRDATE=|>|<|¬=|>=|<= date
In this string:

CRDATE
indicates that the requested change is to be done for those queue entries whose creation date is one of the following:

```
Equal to (=)                      ┐
Greater than (>)                  │
Less than (<)                     ├►  the specified date
Not equal to (¬=)                 │
Greater than or equal to (>=)     │
Less than or equal to (<=)        ┘
```

date
specifies the date against which the queue entries' creation dates are to be compared. It must have the format defined for the system

```
1) mm/dd/yy or dd/mm/yy
2) mm/dd/yyyy or dd/mm/yyyy
```

Do not specify mm greater than 12, dd greater than 31, or yy or yyyy greater than the current year.

CSYSID=current-system-id
indicates that the requested change is to be done if the processing system defined for a queue entry (in a shared spooling environment) matches the specified processing system.

CUSER=current-user-id
indicates that the requested change is to be done if the queue entry's “from user” or “to user” matches the specified user-id. For a definition of user-id, refer to page 6.

FNODE=from_node_id
indicates that the requested change is to be done if the queue entry's “from node” name matches the node name specified by *from_node_id*. However, VSE/POWER does not verify that the specified node name is defined in the network definition table.

FUSER=from_user_id
indicates that the requested change is to be done if the queue entry's “from user” ID matches the user ID specified by *from_user_id*. For a definition of user ID, see *VSE/POWER Administration and Operation*.

Specifying FUSER=LOCAL causes VSE/POWER to search for job entries with an explicit user ID of LOCAL. It does/ not cause a change of attributes of entrie/s originated by local users.

TNODE=to_node_id
indicates that the requested change is to be done if the queue entry's “to node” ID matches the node name specified by *to_node_id*. Up to eight alphameric characters can be specified for *to_node_id*. This operand is valid only if queue entries residing in the transmission queue are to be altered.

TUSER=to_user_id
indicates that the requested change is to be done if the queue entry's “to user” ID matches the user ID specified by *to_user_id*. For a definition of user ID, see *VSE/POWER Administration and Operation*.

The TUSER specification cannot be used for altering queue entries residing in the reader queue.

Specifying TUSER=LOCAL causes VSE/POWER to search for job entries with an explicit user ID of LOCAL. It does not cause a change of attributes of entries destined for local users.

XMTID=R|L|P
If your command applies to the transmission queue, this operand allows you to specify one of the three XMT-subqueues. They are presented as R=reader, L=list, P=punch by the 'I' identifier of a PDISPLAY XMT command display line.

Action Operands

CLASS=class
specifies the new class that is to be assigned to the named VSE/POWER queue entry. “class” may be specified as any alphameric character from A to Z or 0 to 9.

CMPACT=*|name|NO
“name” specifies the name of the compaction table to be used for transmission of a particular job output to the workstation. The name may be up to 4 characters long.

NO means that no compaction is to be performed to transmit the job. * means that the default compaction table (specified in the PRMT macro) is to be used.

COPY=number-of-copies
specifies the number of copies (1 to 255) to be produced after the command is issued, including the copy in progress. If the output is already transmitted to a 3790 device, this value cannot be changed.

DEST=node-id|LOCAL|SYSTEM
has the same effect as the NODE operand, which you should use instead. VSE/POWER accepts the DEST operand for reasons of compatibility.

DISP=disposition|*
gives the new disposition of the affected VSE/POWER job(s). You specify:

```
D   For dispatchable and delete after processing
H   For hold in queue
K   For dispatchable and keep after processing
L   For leave in queue
```

If by this alteration the affected job remains in its current queue, the new disposition means the

- local disposition when the job resides in the RDR/LST/PUN queue
- transmission disposition when the job resides in the XMT queue

However, if the job is moved at the same time by this alteration from a local queue to the XMT queue or vice-versa, the new disposition means the

- transmission disposition when it is a move to the XMT queue
- local disposition when it is a move to the RDR/LST/PUN queue.

For details, see also “Disposition in the Transmit Queue” in *VSE/POWER Networking*.

Use DISP=* when you want to change the temporary disposition X, A, or Y of one or more queue entries back to the original disposition.

Note: A queue entry with disposition A, X, or Y is not automatically processed by the VSE/POWER tasks. Also, the PRELEASE command does not release such a queue entry, nor does a PHOLD command change a temporary disposition. Therefore, you must change the disposition of such a queue entry to one of the valid dispositions before the queue entry can be processed.

To obtain a list of all queue entries with disposition Y, for example, issue the DISPLAY ALL,CDISP=Y command.

DIST=distcode

The operand specifies the new distribution code which is assigned to the affected queue entry. The distribution code consists of up to eight alphameric characters and is passed for a VM writer/punch task via the CP CLOSE command to VM.

You can alter the distribution code of queue entries in the LST and PUN queue. You can also alter the distribution code of output queue entries in the XMT queue.

DUETIME=NULL

NULL specifies that the due date is to be nullified, that is, all specifications of time event scheduling are ignored and lost.

If the due date of a job with disposition D or K has not yet expired, this job becomes now immediately dispatchable.

FNO=* | formnumber

specifies the four-character form number for the applicable queue entry. Specify:

- * if the affected output is to be processed with the location's standard form. For VSE/POWER, this form has no form number.
- For `formnumber`, the four-character number of the form that is to be used for processing the affected output.

NODE=node-id|LOCAL|SYSTEM

specifies that the final destination must be changed.

For “node-id” specify the new node ID. This node ID must be defined in the NDT, if networking is active.

LOCAL or SYSTEM specifies that the current destination ID must be changed to the ID of your own node; this causes the queue entry (or entries) to be removed from the transmission queue and added to the applicable local queue.

PRI=priority

specifies the new priority of the indicated VSE/POWER job(s). The priority is specified as a single digit from 0 to 9. Nine is the highest priority.

REMOTE=remote-id

specifies the remote ID as any number from 0 to 250. It can also be specified in the Rnnn format. 0 indicates the central location. The REMOTE specification applies only to output, and is ignored if specified for an input entry.

SYSID=system-id|N
specifies the system ID of the system on which the job must be run, or on which the output must be produced. If N is specified, any system-id already set will be removed making the affected jobs available to any sharing system.

UINF=user_information
For `user_information`, specify up to 16 characters or blanks. If the character string includes a blank or comma, the entire string must be enclosed in a pair of single quotes; otherwise, the first blank or comma is interpreted as a delimiter by VSE/POWER. If you are nesting single quotes inside single quotes, you must specify them as two adjacent single quotes.

It is recommended to specify characters whose hexadecimal representation is not affected by uppercase conversion. All values are converted to uppercase, as described in *VSE/POWER Administration and Operation* .

The specified character string replaces whatever character string was specified in the * $$ JOB statement (if any) for the job, or whatever was specified in the * $$ LST|PUN statement for the output (or passed from * $$ JOB to the output within the UINF= (also USER=) operand.

See also *VSE/POWER Administration and Operation* for the displayed U='user_information'.

Note: This change can be requested only for inactive (not DISP=*) entries.

USER=user-id|LOCAL|SYSTEM
specifies that the user ID of the entry must be changed. For a definition of user-id, refer to page 6.

LOCAL or SYSTEM indicates that the specified user-id must be set to blanks.

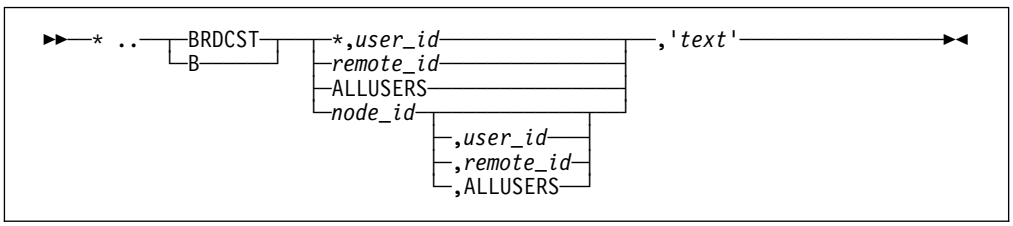
Examples

**** .. ALTER LST,ACCT*,PRI=9***	Change the priority of all jobs in the list queue that start with characters ACCT to 9.
**** .. ALTER PUN,ALL,DISP=H***	Change the disposition of all jobs in the punch queue to “Hold.”

* .. BRDCST

The BRDCST command enables you to send a message to one or to all users of your own or of another node. The broadcast messages are stored in virtual storage until they have been transmitted to their destination, after which they are deleted. The maximum number to be stored is 256.

Broadcast messages of the ALLUSERS type are queued and given a message sequence number. You may use the DISPLAY command to obtain the number of a specific broadcast message.



***** indicates that the message is to be sent to a user at your own node.

user-id
indicates that the message is to be sent to the user with “user-id” (either at the node “node-id” or at the local node).

node-id
indicates that the message is to be sent to a user at the node specified by “node-id”.

remote-id
specifies the ID of the RJE terminal or workstation for which the broadcast message is intended. Remote users are identified by numbers from 1 to 250. 0 is reserved for the central location.

ALLUSERS
indicates that the message is intended for all remote users connected to your system. It is displayed only on request. VSE/POWER places the message into the ALLUSERS message queue.

'text'
The text of the message is contained between single quotation marks. Single quotation marks within the message must be entered as two single quotation marks. The maximum length of the text, including the enclosing quotes, is as follows:

- For ALLUSERS-type messages: 46 characters.
- For transmission within a network: 132 characters.
- For messages from the host system to the terminal: 60 characters.

Examples

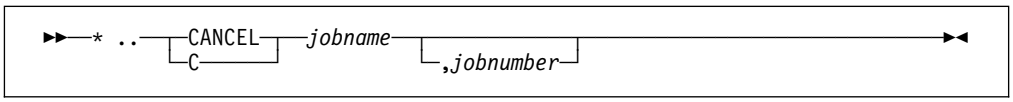
* .. BRDCST 150,'SIGNOFF IN 30 MINUTES'
Message to remote operator with remote ID 150.

* .. BRDCST 0,'INVENTORY IS FINISHED'
Message to central operator.

* .. B ALLUSERS,'PLEASE LOG OFF'
Places the message into the ALLUSERS message queue.

* .. CANCEL

The CANCEL command stops the execution of a job. Only jobs owned by the remote operator can be canceled.



jobname
name of the job to be canceled. The jobname may contain 1 to 8 alphameric characters.

jobnumber
specifies the number assigned to the job by VSE/POWER. 1 to 5 digits may be specified. Use the DISPLAY command to determine the correct job number.

Example

**** .. C INVACC*** Cancel the execution of job INVACC.

* .. DELETE

You may use the DELETE command to delete messages or to remove one or more VSE/POWER jobs from the specified queue. VSE/POWER jobs being processed are not affected by this command. You can delete only those jobs that were submitted by or routed to you.

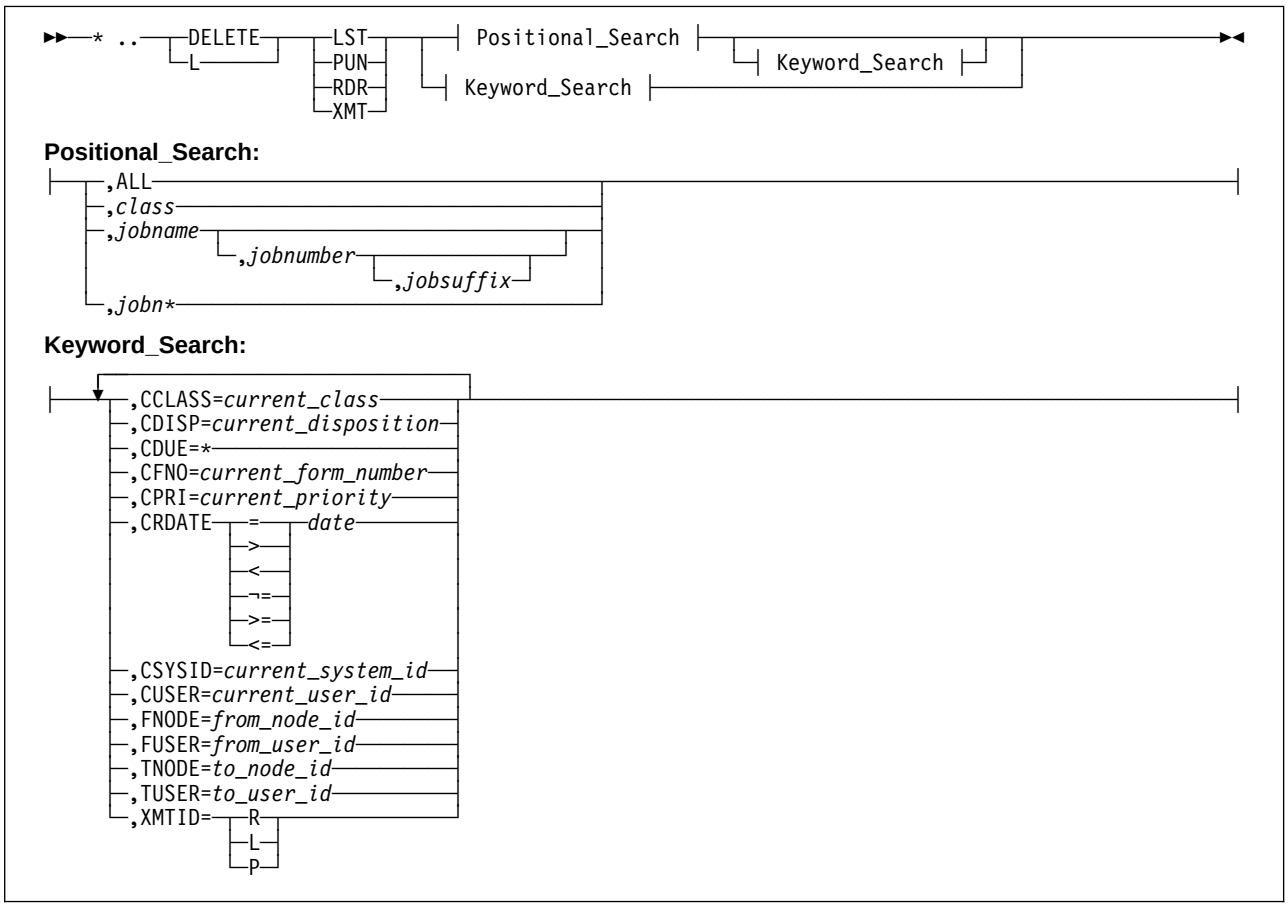
Complete Formats for DELETE

The DELETE command is available in two formats:

- Format 1: Deleting Jobs
- Format 2: Deleting Messages

Complete descriptions of the operands appear on the following pages the same sequence as the operands appear here.

Format 1: Deleting Jobs



Specify the queue for which the command is to be executed, in the form:

LST specify LST to delete jobs in the list queue.
PUN specify PUN to delete jobs in the punch queue.
RDR specify RDR to delete jobs in the reader queue.
XMT specify XMT to delete jobs in the transmission queue.

Positional Search Operands

ALL

specifies that all VSE/POWER jobs in the specified queue are to be deleted. ALL is the default if you specify a queue with one or more keyword search operands in order to have VSE/POWER delete a certain group of entries in the queue.

class

specifies that all VSE/POWER jobs of a certain class are to be deleted from the specified queue. Any alphameric character from A to Z or 0 to 9 may be specified.

jobname

specifies the name by which the entry is known to VSE/POWER. The jobname may contain 1 to 8 alphameric characters.

jobnumber

specifies the job number assigned to the job by VSE/POWER. 1 to 5 digits may be specified. Use the DISPLAY command to determine this number.

jobsuffix

specifies the 1-3 digit job suffix associated with the queue entry to be deleted. Specify this operand if only a specific output segment of the named job is to be deleted.

jobn*

specifies that all VSE/POWER jobs whose job names begin with the specified characters are to be deleted. Up to eight alphameric characters may be specified for *jobn*.

Keyword Search Operands

CCLASS=current-class

indicates that the requested deletion is to be done if the class currently assigned to the queue entry (or entries) matches the specified class. This operand will overwrite a possible specification of the positional 'class' operand. Specification of either 'class' or the 'CCLASS=' operand will expedite the access path to the VSE/POWER queue file. This operand will overwrite a possible specification of the positional 'class' operand.

CDISP=current disposition

indicates that the requested deletion is to be done if the disposition currently assigned to the queue entry (or entries) matches the specified disposition.

CDUE=*

indicates that all jobs are to be deleted for which time event scheduling operands have been specified. Such jobs can either be in the RDR or XMT queue.

CFNO=current-form-number

indicates that the requested deletion is to be done if the form number defined for the output of the queue entry (or entries) matches the specified one.

CPRI=current-priority

indicates that the requested deletion is to be done if the priority currently assigned to the queue entry (or entries) matches the specified priority.

CRDATE=|>|<|¬=|>=|<=date
In this string:

CRDATE
indicates that the requested deletion is to be done for those queue entries whose creation date is one of the following:

```
Equal to (=)
Greater than (>)
Less than (<)                    ►  the specified date
Not equal to (¬=)
Greater than or equal to (>=)
Less than or equal to (<=)
```

date
specifies the date against which the queue entries' creation dates are to be compared. It must have the format defined for the system

```
1) mm/dd/yy or dd/mm/yy
2) mm/dd/yyyy or dd/mm/yyyy
```

Do not specify mm greater than 12, dd greater than 31, or yy or yyyy greater than the current year.

CSYSID=current-system-id
indicates that the requested deletion is to be done if the processing system defined for a queue entry (in a shared spooling environment) matches the specified processing system.

CUSER=current-user-id
requests an affected queue entry to be deleted if the entry's “from user” or “to user” ID matches the ID given in this operand. For a definition of user-id, refer to page 6.

FNODE=from_node_id
requests an affected queue entry to be deleted if the entry's “from node” name matches the node name specified by *from_node_id*.

FUSER=from_user_id
requests an affected queue entry to be deleted if the entry's “from user” ID matches the ID specified by *from_user_id*.

Specifying FUSER=LOCAL causes VSE/POWER to search for job entries with an explicit user ID of LOCAL. It does not cause a deletion of entries originated by local users.

TNODE=to_node_id
requests an affected queue entry to be deleted if the entry's “to node” name matches the node name specified by *to_node_id*. This operand is valid only if your specification for queue is XMT.

TUSER=to_user_id
requests an affected queue entry to be deleted if the entry's “to user” ID matches the ID specified by *to_user_id*.

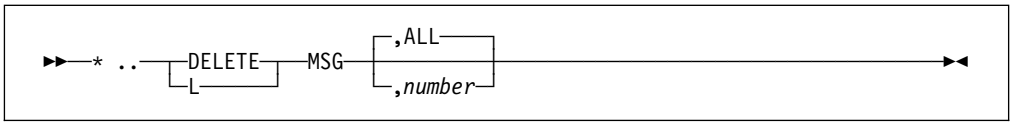
The TUSER specification cannot be used for deleting queue entries residing in the reader queue.

Specifying TUSER=LOCAL causes VSE/POWER to search for job entries with an explicit user ID of LOCAL. It does not cause a deletion of entries destined for local users.

XMTID=R|L|P

If your command applies to the transmission queue, this operand allows you to specify one of the three XMT-subqueues. They are presented as R=reader, L=list, P=punch by the 'I' identifier of a PDISPLAY XMT command display line.

Format 2: Deleting Messages



MSG

specifies that the ALLUSERS-type message with the specified *number* is to be deleted. If you do not specify a number, or specify `ALL`, all ALLUSERS-type messages created by the remote operator issuing the DELETE command are deleted. The message number can be determined using the DISPLAY MSG command.

Examples

* .. DELETE RDR,ALL	Delete the entire reader queue.
* .. DELETE LST,B	Delete all class B VSE/POWER jobs in the list queue.
* .. DELETE MSG	Delete all ALLUSERS-type messages entered from this remote ID.
* .. DELETE LST,INVACC*	Delete all VSE/POWER list queue entries whose names begin with the letters INVACC.

* .. DISPLAY

The DISPLAY command provides a status report of VSE/POWER jobs in the specified queue. Only the status of jobs submitted by, or routed to, the remote operator issuing the DISPLAY command can be displayed. Output from the DISPLAY command is transmitted as soon as the line becomes available for write operations.

If the networking function is used, you can specify the PNET operands to display information relating to the network.

For examples of VSE/POWER produced status reports see “Examples of the DISPLAY Command” on page 85.

Complete Formats for DISPLAY

The following formats are available with the DISPLAY command:

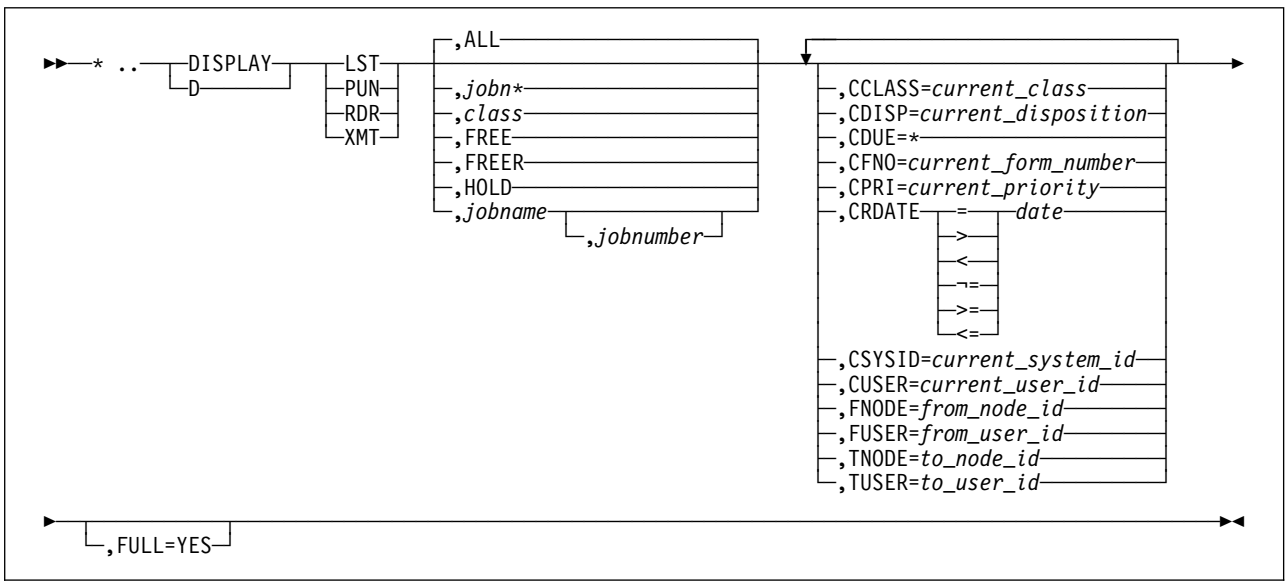
- Formats 1 and 2: Displaying Queue Information
- Format 3: Displaying Mixed Information
- Format 4: Displaying Active Task Status
- Format 5: Displaying NDT Status
- Format 6: Displaying the Active Dynamic Class Table
- Format 7: Displaying Exit Information

Complete descriptions of the operands appear on the following pages the same sequence as the operands appear here.

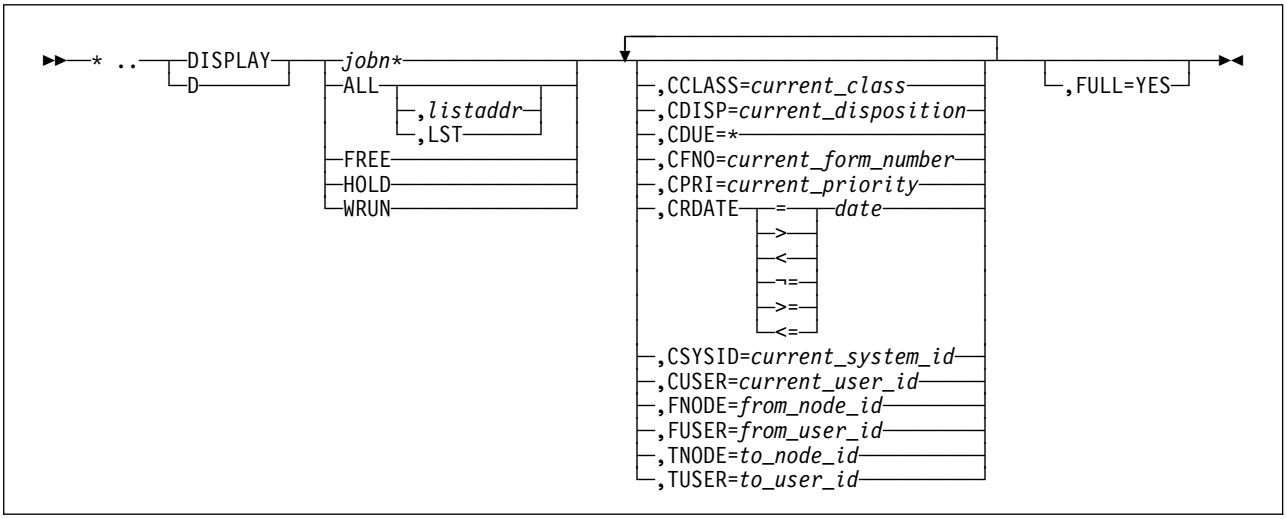
Formats 1 and 2: Displaying Queue Information

Since format 1 and format 2 are nearly identical, their operands are explained only once.

Format 1: Displaying Queue Information for a Selected Queue



Format 2: Displaying Queue Information of all Queues



Specify the queue for which the command is to be executed, in the form:

LST specify LST to display the list queue.
PUN specify PUN to display the punch queue.
RDR specify RDR to display the reader queue.
XMT specify XMT to display the transmission queue.

Positional Search Operands

ALL

specifies a request for the status of all VSE/POWER jobs in the specified queue. If the queue operand is not specified, status information on all jobs in all queues is displayed.

If you want a printed status report, provide, for “listaddr”, the address of a printer in the form cuu (channel and unit number).

Specify ALL,LST if you want VSE/POWER to spool the queue status as LST queue entry rather than displaying it. The LST queue entry has the following attributes:

- $LSTxxxx as job name, where xxxx are the last four digits of the VSE/POWER-assigned job number.
- Priority 9
- Disposition D
- Class A

Specifying ALL,listaddr (or ALL,LST) forces the FULL=YES display function.

Note: Only the status of jobs submitted by, or routed to, the remote operator issuing the DISPLAY command can be displayed.

class

specifies a request for the status of all VSE/POWER jobs in the queue with the specified class. You can specify class as any alphameric character from A to Z or from 0 to 9.

jobname
specifies the name by which the VSE/POWER job is known to VSE/POWER. The jobname may contain 2 to 8 alphameric characters.

jobnumber
specifies the number assigned to the job by VSE/POWER. 1 to 5 digits may be specified.

jobn*
requests a status report on all VSE/POWER jobs whose names begin with the specified characters. For `jobn` you can specify any combination of up to eight alphameric characters. If the queue operand is not specified, status information for all such jobs in all queues is displayed.

FREE
specifies a request for the status of all VSE/POWER jobs in the specified queue that are dispatchable (that is, the jobs that are in the keep or dispatchable state). If the queue operand is not specified, status information is displayed on all such jobs in all queues.

FREER
Specifying `FREER` causes VSE/POWER to produce a status report on all jobs of the reader queue (**excluding jobs in the 'wait for run' subqueue**) whose disposition is one of the following:

D = Delete after processing
K = Keep after processing
*** =** Executing

FREER displays all dispatchable 'ready-to-run or running' entries of the reader queue. FREER is rejected by message 1R52I if LST, PUN, or XMT queue is specified.

Jobs positioned in the 'wait for run' subqueue will not be displayed.

HOLD
specifies a request for the status of all VSE/POWER jobs in the specified queue that are not dispatchable (that is, jobs that are in the hold or leave state). If the queue operand is not specified, status information is displayed on all such jobs in all queues.

WRUN
specifies that VSE/POWER is to display the 'wait for run' subqueue, that is all jobs of all classes with disposition 'D' or 'K' whose due date has not yet expired. If this operand is specified, the jobs are displayed according to the next due date, not to class nor priority. For examples refer to Chapter 3 “Display of the ‘Wait For Run’ Subqueue” in *VSE/POWER Administration and Operation*.

Keyword Search Operands

CCLASS=current-class
indicates that VSE/POWER is to provide a status report if the class currently assigned to the queue entry (or entries) matches the specified class. This operand will overwrite a possible specification of the positional 'class' operand. Specification of either 'class' or the 'CCLASS=' operand will expedite the access path to the VSE/POWER queue file.

CDISP=current-disposition
indicates that VSE/POWER is to provide a status report if the disposition currently assigned to the queue entry (or entries) matches the specified disposition.

For “disposition”, you may specify an asterisk (*) to have VSE/POWER produce a status report on the VSE/POWER jobs that are being processed.

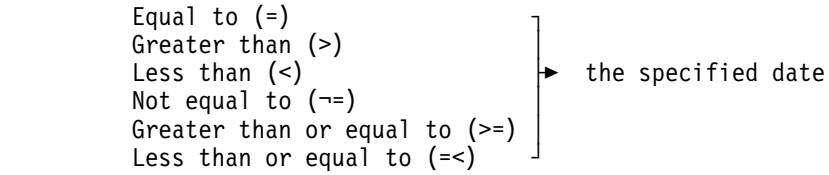
CDUE=*
indicates that all jobs are to be displayed for which time event scheduling operands have been specified. These jobs can either be in the RDR or XMT queue.

CFNO=current-form-number
indicates that VSE/POWER is to provide a status report if the form number defined for the output of the queue entry (or entries) matches the specified one.

CPRI=current-priority
indicates that VSE/POWER is to provide a status report if the priority currently assigned to the queue entry (or entries) matches the specified priority.

CRDATE=|>|<|¬=|>=|<=date
In this string:

CRDATE
requests a status report for those queue entries whose creation date is one of the following:



date
specifies the date against which the queue entries' creation dates are to be compared. It must have the format defined for the system

1) mm/dd/yy or dd/mm/yy
2) mm/dd/yyyy or dd/mm/yyyy

Do not specify mm greater than 12, dd greater than 31, or yy or yyyy greater than the current year.

CSYSID=current-system-id
indicates that VSE/POWER is to provide a status report if the processing system defined for a queue entry (in a shared spooling environment) matches the specified processing system.

CUSER=current-user-id
requests a status report on an affected queue entry if the entry's “from user” or “to user” ID matches the ID given in this operand. For a definition of user-id, refer to page 6.

FNODE=from_node_id
requests a status report on an affected queue entry if the entry's “from node” name matches the node name specified by *from_node_id*.

FULL=YES
causes VSE/POWER to provide a more detailed status report about a job or a selected group of jobs. Following is a partial list of information that VSE/POWER displays, in addition to the normal report, if you specify FULL=YES:

- Time event scheduling information (for RDR queue entries only)
- Distribution code (for output queue entries only)
- Information for 3800 printer
- Creation date
- User information
- Job-suffix (output-segment) number
- Line count (for LST queue entries)
- Original disposition if a job has a temporary disposition
- Number of allocated DBLK groups for the queue entry (0 for tape display)
- Output format, that is, one of the following:

```
 ASA = Records with American National Standard control
       characters
 BMS = Basic mapping support (used by CICS)
CPDS = Composed page data stream (also referred to as
       all-point addressable records)
 ESC = Escape mode (the format is user defined)
 SCS = Standard character string
3270 = 3270 record format (used by CICS)
```

FUSER=from_user_id
requests a status report on an affected queue entry if the entry's “from user” ID matches the ID specified by *from_user_id*.

Specifying FUSER=LOCAL causes VSE/POWER to search for job entries with an explicit user ID of LOCAL. It does not result in a status report on entries originated by local users.

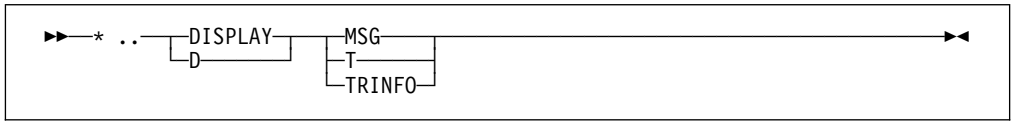
TNODE=to_node_id
requests VSE/POWER to display the status of an affected queue entry if the entry's “to node” name matches the node name specified by *to_node_id*. This operand is valid only if your specification for queue is XMT.

TUSER=to_user_id
requests a status report on an affected queue entry if the entry's “to user” ID matches the ID specified by *to_user_id*.

The TUSER specification cannot be used for displaying the status of queue entries residing in the reader queue.

Specifying TUSER=LOCAL causes VSE/POWER to search for job entries with an explicit user ID of LOCAL. It does not result in a status report on entries to be handled at and destined for the central location.

Format 3: Displaying Mixed Information



MSG
specifies a request to display all ALLUSERS-type messages and the ID of the users who submitted them. You can use the number displayed with every message to delete a specific message.

T requests a display of the following:

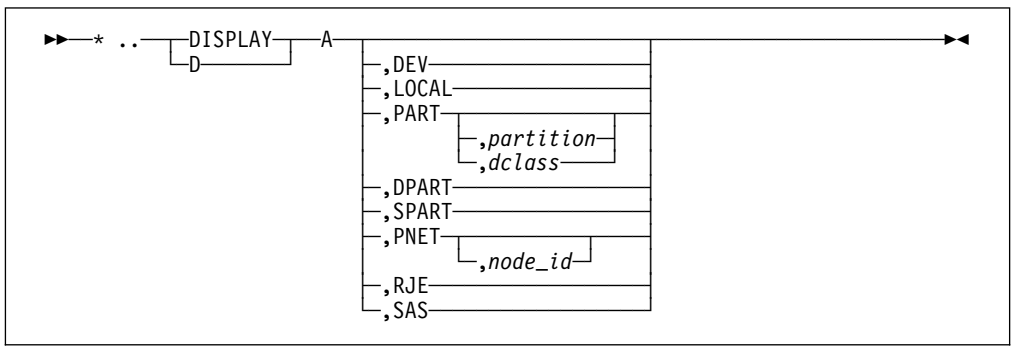
- The current time and date
- The number of storage pages reserved by PFIX macros
- The current number of VSE/POWER tasks
- The system-ID if a valid one was specified during POWER macro generation.
- The node ID of the local node if networking is used
- The SECNODE value of the local system if the VSE Access Control function is activated.
- The SECNODE value of other shared systems if any.

TRINFO
requests a summary display of the following:

- Telecommunication trace area
- Task trace area.

For further details, see the description of the TRINFO operand in *VSE/POWER Administration and Operation*.

Format 4: Displaying Active Task Status



A specify this operand to get a list of all active tasks. You can restrict the type of display by specifying one of the optional operands described below.

DEV
displays all active device-service tasks.

LOCAL
displays all active reader and writer tasks.

PART
limits the display to all active tasks associated with active static or dynamic partitions. You may further limit the display by specifying one of these optional operands:

partition
is the static or dynamic partition ID.

dclass
limits the display to the active tasks associated with all active dynamic partitions started for dynamic class dclass.

DPART
limits the display all active tasks associated with all active dynamic partitions.

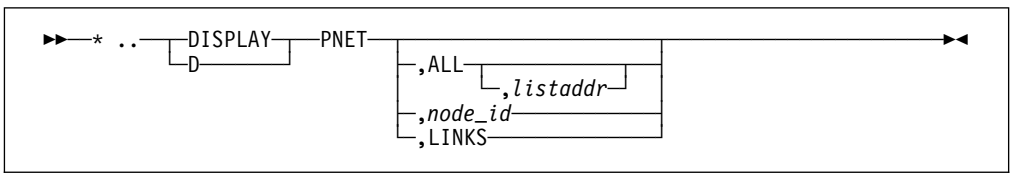
SPART
displays all active tasks associated with active static partitions.

PNET
displays all active network tasks. By specifying “node-id”, only the active tasks for “node-id” are displayed.

RJE
displays all active RJE tasks.

SAS
displays all active spool-access support tasks.

Format 5: Displaying NDT Status



PNET
specifies to display information from the network definition table (NDT) that is currently in use.

PNET, if issued without further operands (see below), specifies to display at which node the DISPLAY PNET command is entered.

You may, in addition, specify one of the optional entries described below.

ALL
specifies to display all entries of the NDT.

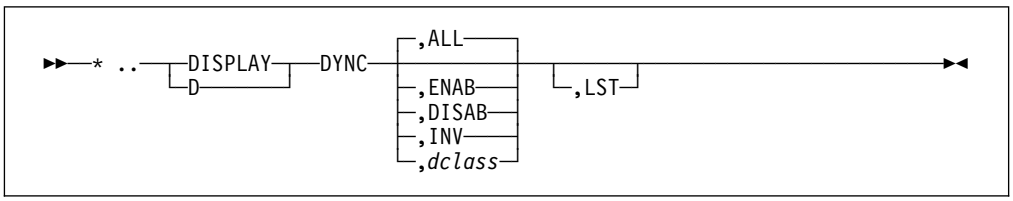
listaddr specifies to produce a printed status report of all entries of the NDT. VSE/POWER then uses the printer for this purpose. Specify the address of the printer in the form cuu (channel and unit number) in one of the following formats:

`cuu` or `X'cuu'`

node_id
specify for `node-id` the name of the node whose NDT entry you want to be displayed.

LINKS
specify LINKS to display the names of all nodes with which your own node has a direct link or a session defined.

Format 6: Displaying the Active Dynamic Class Table



DYNC
Specify this operand to display characteristics of classes contained in the currently active Dynamic Class Table.

ALL
Specify ALL to display all classes of the currently active Dynamic Class Table. ALL is the default.

ENAB
Specify ENAB to display the characteristics of enabled classes only. The following classes are 'enabled' by definition:

- all enabled active classes (state: ENAB)
- all enabled suspended classes (state: SUSPEND)

DISAB
Specify DISAB to display the characteristics of only disabled classes. The following classes are 'disabled' by definition:

- all invalid classes (state: *INV* or INV-SP)
- all disabled valid classes (state: DISAB)

INV
Specify INV to display the characteristics of only those classes flagged 'invalid'.

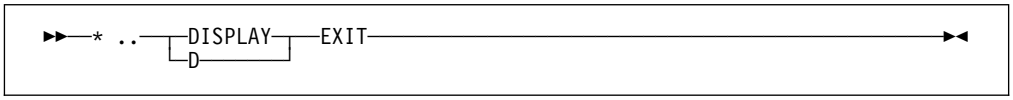
dclass
Specify one of the alphabetic classes as defined in the currently active Dynamic Class Table. The specified class is considered for a display of its characteristics.

LST
Specify LST, if the class characteristics should not be displayed on the console, but should be collected in a list queue entry with the following attributes:

- $DYDxxxx as job name, where xxxx are the last four digits of the VSE/POWER-assigned job number
- Priority 9
- Disposition H
- Class A

  The completion of PDISPLAY DYNC,LST is signalled to the command originator by message 1Q6BI. It identifies the job name and number of the created list queue entry.

Format 7: Displaying Exit Information



EXIT

Specify this operand to display information of the exit routines actually loaded (JOBEXIT, OUTEXIT, NETEXIT, and XMTEXIT).

For each loaded exit, VSE/POWER issues a message line containing information about type of exit, state of exit (enabled or disabled), name of exit, size of work area (decimal), address of the exit (hexadecimal) and size of the exit (decimal).

Examples of the DISPLAY Command

**** .. DISPLAY RDR,ASSM**** Display the status of all VSE/POWER jobs whose names begin with ASSM and that are in the reader queue for the remote operator issuing the command.

**** .. DISPLAY RDR,ASSEM*** Display the status of the VSE/POWER job ASSEM in the reader queue.

**** .. DISPLAY ALL*** Display the status of all VSE/POWER jobs in all queues.

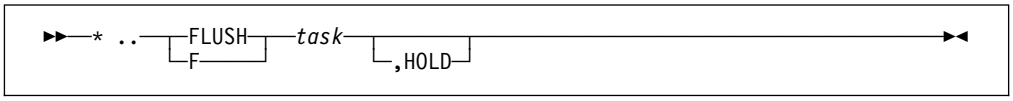
```
1R46I READER QUEUE   P D C S  CARDS
1R46I R30CATOB 00638 4 L A       20 FROM=(R005)
1R46I   LIST QUEUE   P D C S  PAGES  CC FORM
1R46I R30CATOB 00638 4 D A        2   1      TO=(R005) FROM=(R005)
1R46I R30LFA2S 00627 3 L F        6   1 A2S  TO=(R005)
1R46I R30LFA1S 00628 3 K F        6   1 A1S  TO=(R005)
1R46I R30LFNON 00629 3 K F        6   1      TO=(R005)
1R46I  PUNCH QUEUE   P D C S  CARDS  CC FORM
1R46I R30PTRAN 00624 3 L T       15   1      TO=(R005)
```

*Figure 8. Example of a Terminal Console Listing for * .. DISPLAY ALL*

For details on the contents of display lines, see the PDISPLAY command in *VSE/POWER Administration and Operation*.

* .. FLUSH

The FLUSH command causes the VSE/POWER output queue entry currently being processed by an RJE writer task to be discontinued. Output processing is terminated and the output queue entry is deleted, unless HOLD is specified. The command can be issued only for an active RJE writer task that has been interrupted, either by operator action at the central installation or at the terminal, or by an action-type VSE/POWER message.



task
specifies the task to be deleted, in the form:

LST for a list writer task, or
LST1, or LST2, or LST3 for MLU/MDW workstations,
PUN for a punch writer task.

HOLD
specifies that the flushed VSE/POWER output queue entry is not to be deleted but placed in the hold state.

Examples

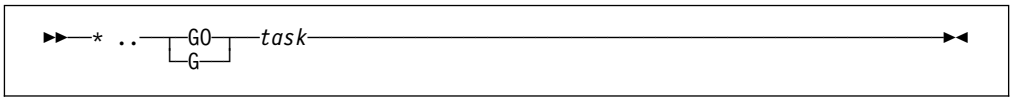
**** .. FLUSH PUN***	Discontinue the punched output currently being processed, delete the punch queue entry, and continue punching with the output for the next job entry in the punch queue.
**** .. FLUSH LST,HOLD***	Skip the remainder of the printed output currently being processed, but do not delete the queue entry from the list queue; continue printing with the output for the next job entry in the list queue.

* .. GO

The GO command reactivates an RJE writer task after it has been interrupted by VSE/POWER either to allow new forms to be mounted on the printer, or to allow different cards to be placed into the hopper of the punch.

Notes:

1. The GO command is not applicable to 3790 workstations. Peripheral data stream information records are specified in the BIND parameters (see Appendix A).
2. 3770 users who work under SDLC must press the ATTN key before entering the GO command.



task
specifies the task to be reactivated, in the form:

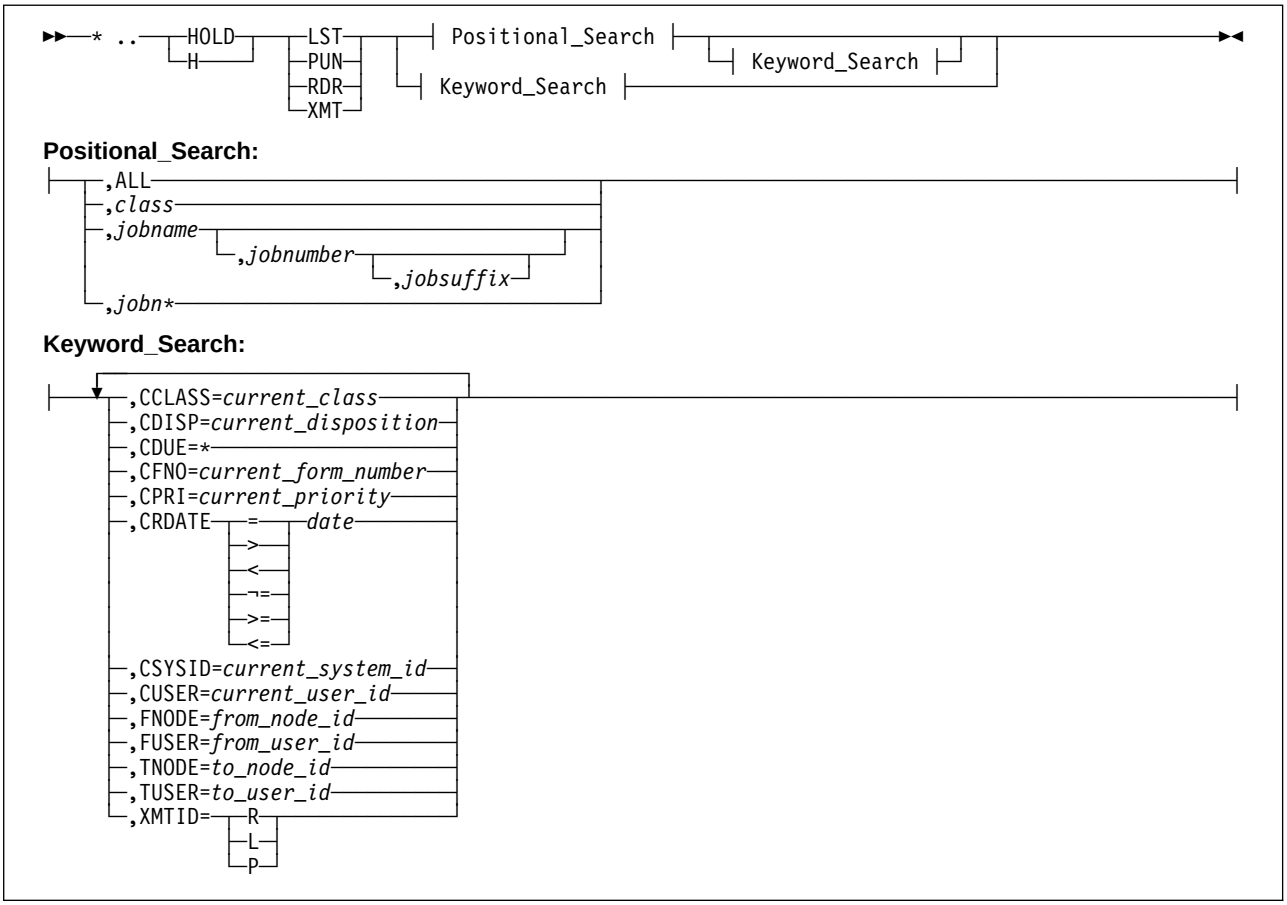
LST for a list writer task,
LST1, or LST2, or LST3 for MLU/MDW workstations,
PUN for a punch writer task.

Example

**** .. GO LST*** Reactivate the list task (after the proper forms have been mounted, for instance).

* .. HOLD

The HOLD command takes one or more jobs out of the dispatchable state and puts them in the hold/leave state. Jobs originally in the “D” state are put in “H” state and jobs from “K” state to “L” state. You can issue a HOLD command only for VSE/POWER jobs that were submitted by you or whose output was routed to your terminal or workstation.



Specify the queue for which the command is to be executed, in the form:

LST specifies to hold jobs in the list queue.
PUN specifies to hold jobs in the punch queue.
RDR specifies to hold jobs in the reader queue.
XMT specifies to hold jobs in the transmission queue.

Positional Search Operands

ALL

Specify ALL if all entries (with disposition D or K) of the named queue are to be placed into the hold or leave state. ALL is the default if you specify a queue with one or more keyword operands in order to have only a certain group of entries in the queue placed into the hold or leave state.

class

specifies that all VSE/POWER jobs for a certain class in the specified queue are to be held.

jobname
specifies the 1 to 8-character job name by which the entry is known to VSE/POWER.

jobnumber
specifies the number assigned to the job by VSE/POWER. 1 to 5 digits may be specified. Use the DISPLAY command to determine this number.

jobsuffix
specifies the 1-3 digit job suffix associated with the queue entry to be held. Specify this operand if only a certain output segment of the named job is to be held.

jobn*
specifies that VSE/POWER jobs of the specified queue whose names begin with the specified characters are to be held. Up to eight alphameric characters can be specified in place of `jobn`.

Keyword Search Operands

CCLASS=current-class
indicates that an applicable queue entry is to be placed into the hold state if the class currently assigned to this queue entry matches the specified class. This operand will overwrite a possible specification of the positional 'class' operand. Specification of either 'class' or the 'CCLASS=' operand will expedite the access path to the VSE/POWER queue file.

CDISP=current-disposition
indicates that an applicable queue entry is to be placed into the hold state if the disposition currently assigned to this queue entry matches the specified disposition.

CDUE=*
indicates that all jobs are to be held for which time event scheduling operands have been specified. Such jobs can either be in the RDR or XMT queue.

CFNO=current-form-number
indicates that an applicable queue entry is to be placed into the hold state if the form number currently defined for the entry's output matches the specified form number.

CPRI=current-priority
indicates that an applicable queue entry is to be placed into the hold state if the priority currently assigned to this queue entry matches the specified priority.

CRDATE=|>|<|¬=|>=|<=date
In this string:

CRDATE
requests those queue entries to be placed into the hold or leave state whose creation date is one of the following:

```
Equal to (=)
Greater than (>)
Less than (<)                    ►  the specified date
Not equal to (¬=)
Greater than or equal to (>=)
Less than or equal to (<=)
```

date
specifies the date against which the queue entries' creation dates are to be compared. It must have the format defined for the system

1) mm/dd/yy or dd/mm/yy
2) mm/dd/yyyy or dd/mm/yyyy

Do not specify mm greater than 12, dd greater than 31, or yy or yyyy greater than the current year.

CSYSID=current-system-id
indicates that an applicable queue entry is to be placed into the hold state if the system ID currently assigned to this queue entry matches the specified ID.

CUSER=current-user-id
requests an affected queue entry to be placed into the hold or leave state if the queue entry's “from user” or “to user” matches the specified user ID. For a definition of user-id, refer to page 6.

FNODE=from_node_id
requests an affected queue entry to be placed into the hold or leave state if the entry's “from node” name matches the node name specified by *from_node_id*. However, VSE/POWER does not verify that the specified node name is defined in the network-definition table.

FUSER=from_user_id
requests an affected queue entry to be placed into the hold or leave state if the entry's “from user” ID matches the user ID specified by *from_user_id*.

Specifying FUSER=LOCAL causes VSE/POWER to search for job entries with an explicit user ID of LOCAL; it does not cause the status of local-user originated queue entries to be changed.

TNODE=to_node_id
requests an affected queue entry to be placed into the hold or leave state if the entry's “to node” name matches the node name specified by *to_node_id*. This operand is valid only if your specification for queue is XMT.

TUSER=to_user_id
requests an affected queue entry to be placed into the hold or leave state if the entry's “to user” ID matches the user ID specified by *to_user_id*.

The TUSER specification cannot be used for changing the status of reader-queue entries.

Specifying TUSER=LOCAL causes VSE/POWER to search for job entries with an explicit user ID of LOCAL; it does not cause a status change of entries destined for local users.

XMTID=R|L|P
If your command applies to the transmission queue, this operand allows you to specify one of the three XMT-subqueues. They are presented as R=reader, L=list, P=punch by the 'I' identifier of a PDISPLAY XMT command display line.

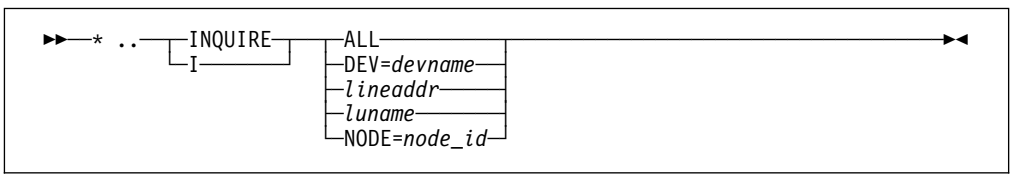
Example

**** .. HOLD LST, PRINT1*** Put the job with job name PRINT1 from the list queue in hold state.

* .. INQUIRE

The INQUIRE command provides you with status information for one or all of the following:

A BSC line
An external output device
A node
An SNA LU



ALL
specifies that all status information which VSE/POWER can supply is to be displayed.

DEV=devname
specifies the name of the external output device to be used. The name you specify is the one by which the device-owning subsystem or application program knows this device.

lineaddr
specifies the address of the BSC line for which status information is requested, specified in the format cuu or X“cuu”.

luname
specifies the LU name for which status information is desired.

NODE=node-id
specifies that status information for node “node-id” has to be displayed. For “node-id” specify from one to eight alphanumeric characters; the first character must be one of the letters A through Z, #, @, or $.

The status of an RJE,BSC line may be one of the following:

PROCESSING	The remote operator has entered a valid * .. SIGNON command.
INACTIVE	The line has been started by the central operator with a START command, but no user is currently signed on.
NOT INITIATED	The line has not been started by the central operator.
NOT SUPPORTED	Support for the line was not provided during VSE/POWER generation.

The status of an SNA LU may be one of the following:

PROCESSING	The remote operator is logged on and I/O processing is taking place. His remote ID is displayed after the word PROCESSING.
NOT LOGGED ON	The LU is not logged on, or the specified LU name is invalid.
LOGGED ON	The session is logged on, but no processing is taking place.
LOGGING ON	The session is in the process of logging on.

The status of a node connection may be one of the following:

SESSION PENDING	Connection is not yet fully established to the node.
PROCESSING	Connection is established to node.

Example

**** .. INQUIRE ALL***	Display the status of all supported lines and SNA LUs. The system's reply is in the form:

030 PROCESSING 22

031 PROCESSING 150

032 PROCESSING 4

033 NOT INITIATED

034 INACTIVE

LU1 PROCESSING 152

LU2 PROCESSING 154

LOGOFF

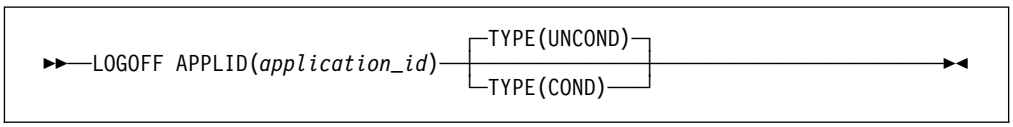
You can terminate an individual RJE,SNA session by entering either a LOGOFF command through VTAM or a SIGNOFF command through VSE/POWER.

Enter the LOGOFF command at the keyboard/printer after pressing the System Request key. You may enter the VSE/POWER SIGNOFF command at the keyboard/printer or via the card reader.

VSE/POWER supports conditional and unconditional LOGOFF commands. SIGNOFF is always conditional and is equivalent to the conditional LOGOFF command.

Usage Notes:

1. The LOGOFF command is not valid when entered at a 3790.



APPLID(application-id)
notifies VTAM that the terminal at which the command is entered is to be detached from the VSE/POWER application program with the ID “application-id” specified in the SNA operand of the POWER macro.

TYPE(COND)
causes VTAM to schedule the VSE/POWER LOSTERM exit routine. VSE/POWER disconnects the terminal from the system after the job entry currently being processed has been completed. Any outstanding tasks are released. Message 1V12I is displayed at the remote operator's console printer.

TYPE(UNCOND)
causes VTAM to schedule the VSE/POWER LOSTERM exit routine. VTAM terminates the session between the terminal and VSE/POWER without allowing the job entry that is being processed to complete. It then passes control to VSE/POWER, which detaches any outstanding SNA task relating to this terminal. No message is displayed at the remote operator's console printer.

LOGON

The LOGON command identifies an SNA terminal session to VTAM, which in turn passes the logon data to VSE/POWER. This command must be entered at the keyboard/printer after pressing the System Request key.

The terminal password, if one is specified, must match the one defined for the remote operator in a PRMT macro during VSE/POWER generation. If the PRMT macro does not specify a password, the LOGON password is ignored if specified.

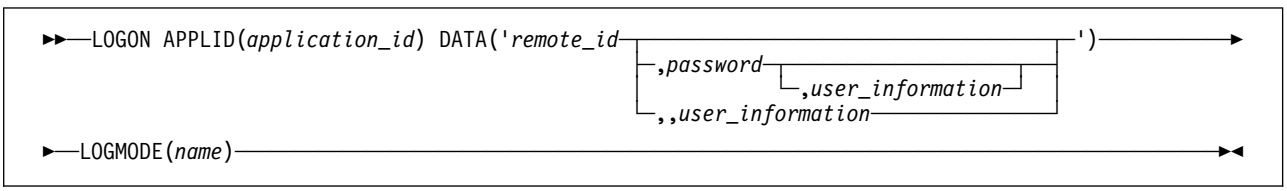
The LOGON command is sent by the LU to VTAM, requesting permission to establish a logical connection between VSE/POWER and the LU. VSE/POWER validates the remote ID and the password parameters.

For MLU workstations, the remote ID and the optional password of the DATA fields from the LOGON requests must be identical for all LUs of a given workstation. The user information may be different.

For every session the SNA workstation submits a LOGON command to VTAM. VTAM notifies VSE/POWER and passes the logon data to VSE/POWER on request. The maximum number of LOGON requests per workstation that VSE/POWER accepts is specified by means of the SESSLIM parameter in the PRMT generation macro.

Usage Notes:

1. The LOGON command is not valid when entered at the 3790.



APPLID(application-id)
causes VTAM to attach the terminal (LU) to the VSE/POWER application program with the ID application-id. The application ID must be identical to the SNA parameter value specified by the POWER macro.

LOGMODE(name)
specifies the name of an entry in the LOGON mode table defined during VTAM generation for this LU, containing, among others, the BIND parameters. The entry contains the session parameters to be used, while the terminal operates under control of VSE/POWER. The LOGON mode table name is specified in the MODETAB parameter of the VTAM/NCP LU macro.

DATA
“remote-id” specifies the remote ID, assigned to the remote operator during VSE/POWER generation, by means of the REMOTE parameter of the PRMT macro.

“password” specifies the terminal password set during VSE/POWER generation by the PSWRD parameter of the PRMT macro.

If no password was specified in the PRMT macro, the password may be omitted from the user data, otherwise it is ignored.

"user information" consists of up to 16 bytes of user information to be moved into the session account record. For information on VSE/POWER account records, see *VSE/POWER Application Programming*.

Example

LOGON APPLID(POWERRJE) DATA('002,NEPTUNE')

Log on at a terminal with remote ID 002 and password NEPTUNE.

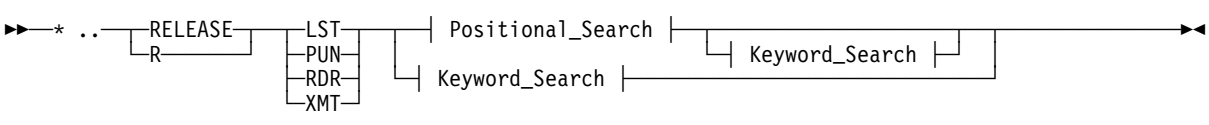
* .. RELEASE

The RELEASE command takes one or more VSE/POWER jobs out of the hold or leave state and makes them available for processing.

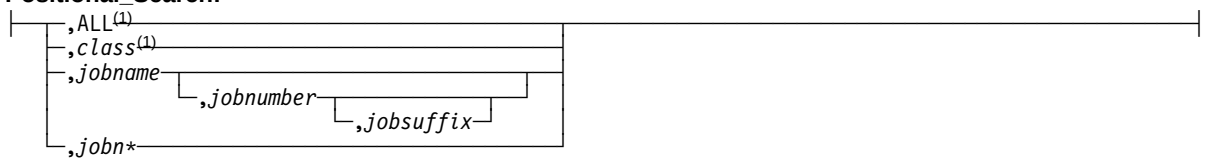
Using the command changes the sequence of the jobs in the specified queue; they are processed in accordance with the classes and priorities defined for them. If an affected job is in the (RDR) queue and was executed previously, VSE/POWER gives the job a new jobnumber.

After processing, a job originally in disposition L returns to disposition L, and a queue entry in disposition H is deleted from the queue. You can issue a RELEASE command only for those VSE/POWER jobs that were submitted by you or whose output was routed to your terminal.

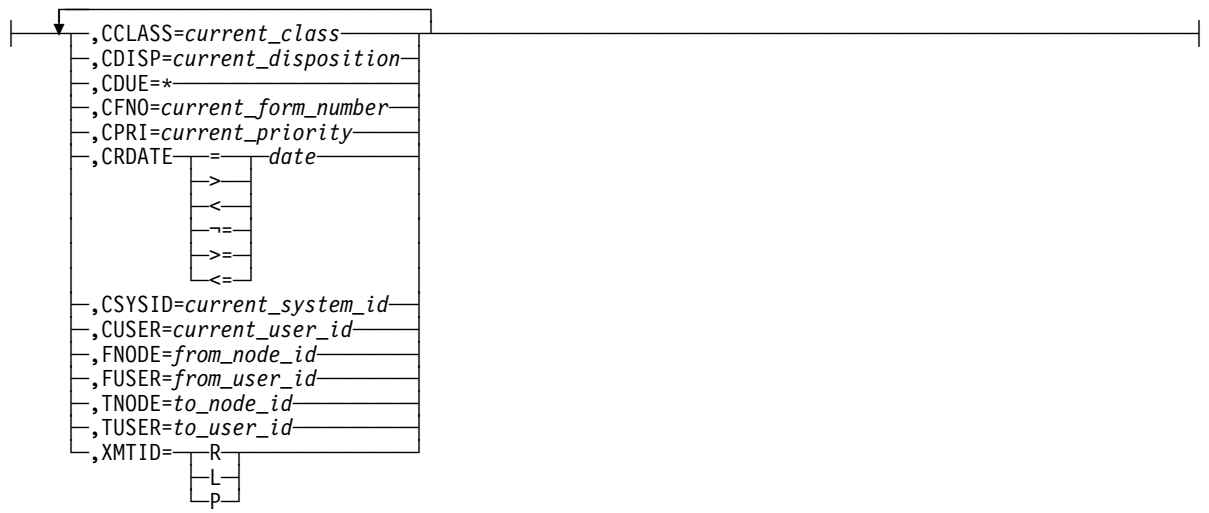
Note: Queue entries with a temporary disposition of A, X, or Y are not changed.



Positional_Search:



Keyword_Search:



Note:

1 If only *'ALL'* or *'class'* is specified, jobs in the "L" state are not released.

Specify the queue for which the command is to be executed, in the form:

LST	specify LST to release jobs in the list queue.
PUN	specify PUN to release jobs in the punch queue.
RDR	specify RDR to release jobs in the reader queue.
XMT	specify XMT to release jobs in the transmission queue.

Positional Search Operands

ALL
specifies that all VSE/POWER jobs in the specified queue that were submitted by you are to be released, except those with disposition L. ALL is the default if you specify a queue with one or more keyword search operands in order to have a certain group of entries in the queue to be released.

class
specifies that VSE/POWER jobs of a certain class in the specified queue are to be released, provided these jobs were submitted by you. If an output queue is specified, the command applies only to output of jobs routed to your terminal. You can specify up to four alphameric characters.

jobname
specifies the name by which the VSE/POWER job is known to VSE/POWER.

jobnumber
specifies the number assigned to the job by VSE/POWER. 1 to 5 digits may be specified. You can use the DISPLAY command to obtain this number.

jobsuffix
specifies the 1-3 digit job suffix associated with the queue entry to be released. Specify this operand if only a certain output segment of the named job is to be released.

jobn*
requests that those VSE/POWER jobs in the specified queue whose names begin with the specified characters are to be released, provided these jobs were submitted by you. If an output queue is specified, the command applies only to output of jobs routed to your terminal. You can specify up to eight alphameric characters in place of `jobn`.

Keyword Search Operands

CCLASS=current-class
indicates that the requested release is to be done if the class currently assigned to the queue entry (or entries) matches the specified class. This operand will overwrite a possible specification of the positional 'class' operand. Specification of either 'class' or the 'CCLASS=' operand will expedite the access path to the VSE/POWER queue file.

CDISP=current-disposition
indicates that the requested release is to be done if the disposition currently assigned to the queue entry (or entries) matches the specified disposition.

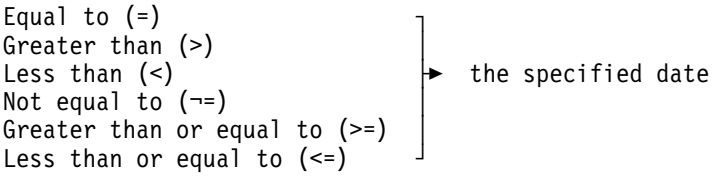
CDUE=*
indicates that all jobs are to be released for which time event scheduling operands have been specified. These jobs can either be in the RDR or XMT queue.

CFNO=current-form-number
indicates that the requested release is to be done if the form number defined for the output of the queue entry (or entries) matches the specified one.

CPRI=current-priority
indicates that the requested release is to be done if the priority currently assigned to the queue entry (or entries) matches the specified priority.

CRDATE=|>|<|¬=|>=|<=date
In this string:

CRDATE
indicates that those queue entries are to be released whose creation date is one of the following:



date
specifies the date against which the queue entries' creation dates are to be compared. It must have the format defined for the system

1) mm/dd/yy or dd/mm/yy
2) mm/dd/yyyy or dd/mm/yyyy

Do not specify mm greater than 12, dd greater than 31, or yy or yyyy greater than the current year.

CSYSID=current-system-id
indicates that the requested release is to be done if the processing system defined for a queue entry (in a shared spooling environment) matches the specified processing system.

CUSER=current-user-id
requests an affected queue entry to be released if the queue entry's “from user” or “to user” matches the specified user ID. For a definition of user-id, refer to page 6.

FNODE=from_node_id
requests an affected queue entry to be released if the entry's “from node” name matches the node name specified by *from_node_id*. However, VSE/POWER does not verify that the specified node name is defined in the network-definition table.

FUSER=from_user_id
requests an affected queue entry to be released if the entry's “from user” ID matches the user ID specified by *from_user_id*.

Specifying FUSER=LOCAL causes VSE/POWER to search for job entries with an explicit user ID of LOCAL. It does not cause the release of entries originated by local users.

TNODE=to_node_id
requests an affected queue entry to be released if the entry's “to node” name matches the node name specified by *to_node_id*. This operand is valid only if your specification for queue is XMT.

TUSER=to_user_id
requests an affected queue entry to be released if the entry's “to user” ID matches the user ID specified by *to_user_id*.

The TUSER specification cannot be used for releasing queue entries residing in the reader queue.

Specifying TUSER=LOCAL causes VSE/POWER to search for job entries with an explicit user ID of LOCAL. It does not cause a release of entries destined for local users.

XMTID=R|L|P

If your command applies to the transmission queue, this operand allows you to specify one of the three XMT-subqueues. They are presented as R=reader, L=list, P=punch by the 'I' identifier of a PDISPLAY XMT command display line.

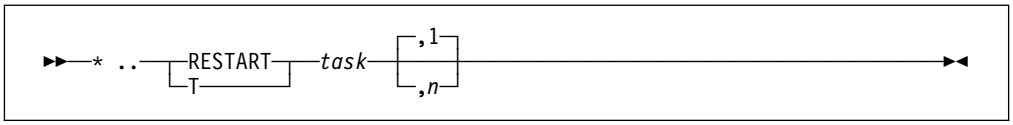
Examples

**** .. RELEASE LST,PAYROLL***	Release the printed output of VSE/POWER job PAYROLL for processing.
**** .. RELEASE RDR,ALL***	Make all VSE/POWER jobs in the hold state, that were submitted by you, available for execution.
**** .. RELEASE LST,PAY****	Release for processing all printed output of VSE/POWER jobs whose output is routed to you and whose names begin with the characters PAY.

* .. RESTART

The RESTART command directs an RJE writer task to discontinue output processing immediately and to resume processing of output from the beginning or from a specified page or card. For a 3790, the command can be issued anytime. It will be processed by any free session LU. For RJE,BSC or for a single LU workstation RJE,SNA, you can issue the RESTART command only for an active writer task that has been interrupted by operator action or by an action-type VSE/POWER message. For an MLU workstation RJE,SNA (that is, 3790), the command can be entered anytime.

Note: If the operator wishes to restart his output task where he interrupted it with the * .. STOP task,RESTART command, it is not possible to use the * .. RESTART command; the * .. START task command must be used instead.



task
specifies the task to be restarted in the form:

LST for the list writer task,
LST1, or LST2, or LST3 for MLU/MDW workstations,
PUN for a punch writer task.

n specifies a signed or unsigned value from 0 to 999999. For a list writer task, a plus sign indicates the number of pages forward and a minus sign indicates the number of pages backward from the interrupted page; no sign indicates the number of pages from the beginning of the current output.

For a punch writer task, a plus sign indicates the number of cards forward, and a minus sign indicates the number of cards backward from the interrupted punch record; no sign indicates the number of punch records from the beginning of the current output.

If the operand is omitted or specifies a backward count that is too large, output resumes from the first page (or punch record). If too large a forward count is specified, VSE/POWER issues a message and ignores the command.

Example

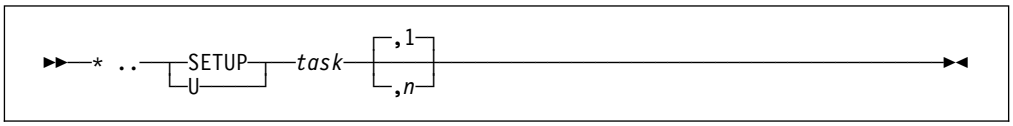
**** .. RESTART LST,-10*** Reprint the preceding ten pages and continue to the end of the current output.

* .. SETUP

The SETUP command can be entered only after the mounting of special forms has been requested by message 1Q40A. The command causes one or more “setup” pages of spooled list data to be printed, substituting the character X for all printable characters. During printing of these pages, you can manually align the forms. To resume normal printing, issue the * .. GO command.

Notes:

1. Users of the 3770 must press the ATTN key before the SETUP command.
2. The SETUP command is not applicable to 3790 workstations. Peripheral data stream information records are specified in the BIND parameters (see Appendix A).



task
specifies the task processing the output for which a page layout is to be printed. LST applies to the list writer task, and LST1, LST2, or LST3 apply to MLU/MDW workstations.

n specifies the number of setup pages that are to be printed. Any number from 1 to 99 can be specified. If n is omitted, one setup page is printed. VSE/POWER counts physical pages. A physical page is defined as a full page or as a skip to channel.

Example

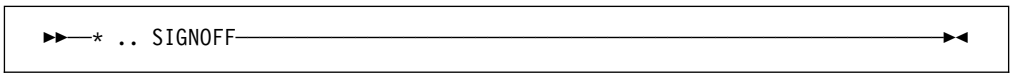
**** .. SETUP LST,2*** Print two setup pages.

For an example of printed setup pages and the corresponding printed output pages, see the discussion of the PSETUP command in *VSE/POWER Administration and Operation*.

* .. SIGNOFF

The SIGNOFF command informs VSE/POWER that the current RJE session will terminate. SIGNOFF is conditional (task entries currently in process finish) for RJE,SNA terminals, but unconditional for BSC terminals. VSE/POWER will then disconnect the terminal from the system, stop any writer task active for the line, and prepare the line for other terminals to sign on.

Note: For BSC terminals only: A terminal is forced to sign off when it has been idle for a predefined period of time. This time is set when VSE/POWER is generated at the central installation by specification of the TIMEOUT operand in the PLINE macro.



No operand is required.

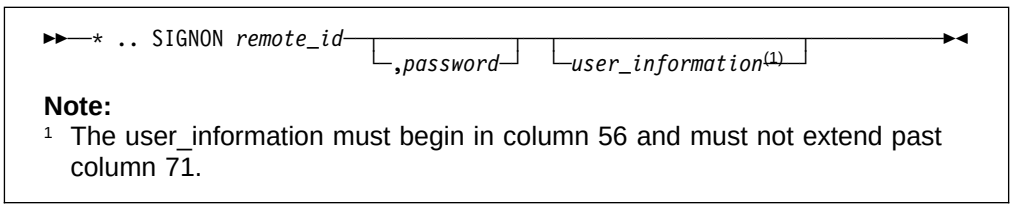
* .. SIGNON

The SIGNON command indicates that a terminal session is to be started. This command must be the first command transmitted from the terminal after the line is started by the central operator.

If an invalid SIGNON command is read, the reader is flushed till it is empty or a new SIGNON command is found. If no other SIGNON is read, VSE/POWER tries to inform the remote operator about the error, and the line is reset to initial state, that is for a switched line the terminal is disconnected, and RJE/BSC waits till the remote operator dials in again.

Note:

- The SIGNON command is not valid when entered from a 3790.
- For BSC terminals: A SIGNON is valid after signoff only if messages 1R16I and 1R08I had been received by the terminal. If these messages had not been received, the SIGNON is ignored.



Note:
1 The user_information must begin in column 56 and must not extend past column 71.

remote_id
specifies the remote ID assigned to your terminal when VSE/POWER was generated at the central installation. If you use this remote ID to sign on at another terminal, the results of the operation are unpredictable. A SIGNOFF statement must be read to make the line operational again.

password
specifies the password set for the line either by the central operator or when VSE/POWER was generated at the central installation.

user_information
consists of up to 16 bytes of user information which is moved to the line account record. This information must begin in column 56 and must not extend past column 71.

Example -- Signon at a Terminal

**** .. SIGNON 002,NEPTUNE*** Sign on at a terminal with remote ID 002 and password NEPTUNE.

Your system programmer can use the VTAM/USS tailoring services to build a USS table, thus enabling you to enter a simplified form of the LOGON command.

Tailoring Macros to Support a SIGNON Command

The following example describes how to code the tailoring macros to support a SIGNON command. Except for the parentheses and single quotation marks before and after the parameter field, the modified SIGNON command is identical to the VSE/POWER RJE,BSC SIGNON command.

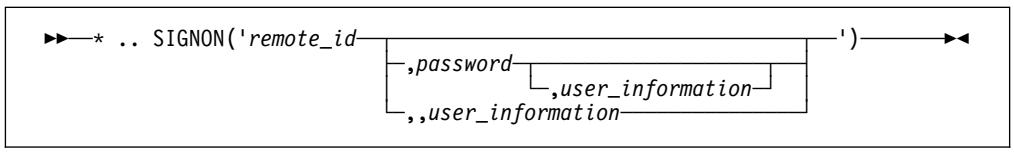
```
 name    USSTAB TABLE=name
         USSCMD   CMD=SIGNON,REP=LOGON,FORMAT=PL1
         USSPARM PARM=APPLID,DEFAULT=POWER
         USSPARM PARM=LOGMODE,DEFAULT=LOGMODE table entry (see Note)
         USSPARM PARM=P1,REP=DATA
         USSEND
-----------------------------------------------------------------------

Note: A LOGMODE table entry should be generated by coding
a VTAM MODEENT macro, to define the BIND parameters that are
supported by VSE/POWER.  A default batch table is supplied by VTAM,
which is supported by VSE/POWER with the exception of byte 5, bit 6;
if on, this bit is turned off by VSE/POWER.

 Example:

         MODEENT LOGMODE=BATCH1,
                  FMPROF=X'03',
                  TSPROF=X'03',
                 PRIPROT=X'A3',
                 SECPROT=X'A1',
                 COMPROT=X'7080'
```

The LOGON command can now be replaced by:



The name specified by the TABLE parameter of the USSTAB macro must correspond to the one specified by the USSTAB parameter in the VTAM/NCP LU macro, for every unit for which the simplified LOGON is to be used. The LOGMODE table entry specified by the DEFAULT parameter of the second USSPARM macro must correspond to the entry in the LOGON MODE table, defined during VTAM generation for the LU in question.

* .. START

The START command initiates an RJE writer task. Since VSE/POWER does not transmit unsolicited output to a terminal, you must send a START command to receive output.

The START command also allows you to resume receipt of messages sent to your terminal if, during the current session, you requested that these messages be ignored (see STOP command). The command is ignored when applied to an active task.

A START command is also necessary to resume output stopped by means of the * .. STOP task,RESTART command.

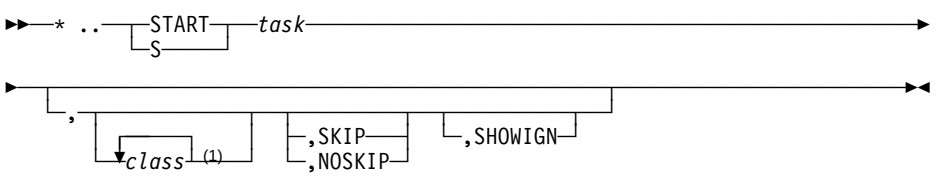
Note: An RJE reader task can only be started by the central operator.

Complete Formats for START

The following formats are available with the START command:

- Format 1: Starting an RJE Writer Task
- Format 2: Starting the Processing of Messages

Format 1: Starting an RJE Writer Task



Note:
[1] You may specify up to four classes.

task
specifies the writer task to be started, in the form:

LST for a list writer task,
LST1, or LST2, or LST3 for MLU/MDW workstations,
PUN for a punch writer task (not valid for the 3790).

Output for the terminal is processed on a first-in, first-out basis within class and within priority group.

class
defines the output class or classes under which the task is to operate. You can specify up to four classes by coding up to four of the alphameric characters A to Z or of the numerals 0 to 9. The order in which you specify these characters will be the order in which the classes are processed. If no class is specified, the writer task selects class A output.

SKIP
specifies that a skip-to-channel 1 is to be inserted preceding the job output. VSE/POWER inserts a skip-to-channel 1:

- If a write command occurs and no skip-to-channel 1 was found earlier, or
- If only control commands were found in the output.

NOSKIP
specifies that *no* skip-to-channel 1 is to be inserted in the output.

A specification of NOSKIP overrides a SKIP=YES specification in the autostart statement SET, if present.

If the SKIP|NOSKIP operand is omitted, VSE/POWER takes the specification from the autostart SET statement (if present) as default.

SHOWIGN
When a writer task is started with this option, any usually ignored CCW op-code is printed or punched as hexadecimal data and is followed by up to 25 characters of original user data. This provides additional debugging help when trying to identify ignored records in the original data stream as presented by an IPW$$DD dump.

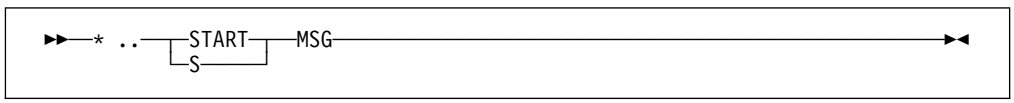
For locating these records easily within the output data stream, every line is marked with 10 leading and 10 trailing '-' characters.

Example:

```
---------- IGNORED: X'0P' ABCDEFGHIJKLMNOPQRSTUVWXY ----------
```

For more details on ignored records, refer also to the SET IGNREC autostart statement and the section entitled “If Output Records are Ignored,” both in *VSE/POWER Administration and Operation*.

Format 2: Starting the Processing of Messages



MSG
specifies that the receipt of all subsequent system and remote terminal messages directed to your terminal is to be resumed.

This operand remains effective until the end of the current session or until a STOP MSG command is sent to the central installation.

Note

This operand is *not* valid for SNA workstations.

Examples

* .. START PUN	Start a punch writer task to transmit class A output.
* .. START LST,AB5	Start a list writer task to transmit class A, class B, and class 5 output.

* .. STOP

The STOP command stops an RJE writer task or informs VSE/POWER that messages are no longer to be transmitted to the terminal.

Usage Notes:

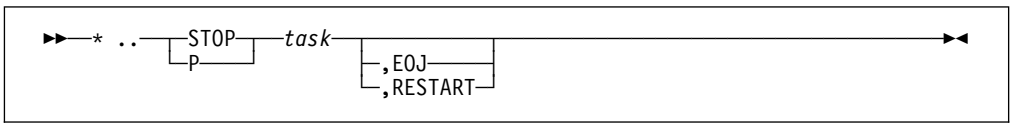
1. An RJE reader task can only be stopped by the central operator.
2. If only “task” is specified, output processing stops immediately. When the task is started again (via an * .. START command), it transmits the interrupted output from the beginning.

Complete Formats for STOP

The following formats are available with the STOP command:

- Format 1: Stopping a Task
- Format 2: Stopping Messages

Format 1: Stopping a Task



task
specifies the task to be stopped, in the following form:

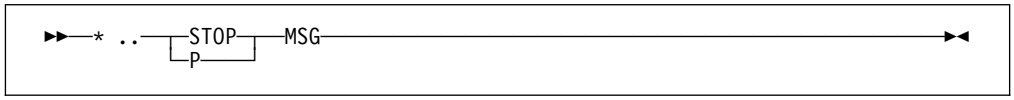
LST for a list writer task,
LST1, or LST2, or LST3 for MLU/MDW workstations,
PUN for a punch writer task.

EOJ
specifies that the task should not stop until it has completed processing the current output (see Note 2, above).

RESTART
specifies that, when the task is started again, processing of the output is to begin

- at the next record after the last one processed before the STOP, if a punch-writer task was stopped.
- with the next page following the last one processed before the STOP, if a list-writer task was stopped. This applies also if the number-of-copies value for the output is greater than 1.

Format 2: Stopping Messages



MSG
specifies that all remote terminal messages subsequently directed to this terminal are to be ignored and that messages in the queue not yet transmitted to the terminal are to be deleted.

Note

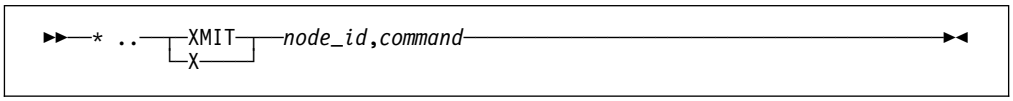
This operand is *not* valid for SNA workstations.

Examples

**** .. STOP PUN,RESTART***	Stop the punch writer task immediately. When the task is started again, processing of the output continues at the point of interruption.
**** .. STOP LST,EOJ***	Stop the list writer task after it has completed processing of the current list output.
**** .. STOP LST***	Stop the list writer task immediately. When the task is started again, processing of the interrupted output starts at the beginning.
**** .. STOP MSG***	Ignore any further messages directed to this terminal.

* .. XMIT

The XMIT command is used to queue commands into the command queue of a networking system. The command being entered is then available for transfer to another node in the network.



node_id
specifies the name of the node that is to receive the command(s).

command
specifies one command (with or without operands) that is to be transmitted to the node specified in node-id.

For commands that are authorized for execution on this node, refer to figure "Authorization Table for Remote and Cross-Partition (XPART) Users of Remote Nodes" in *VSE/POWER Networking*.

Appendix A. LOGON Mode Table and VTAM BIND Parameter Requirements

To use VSE/POWER RJE,SNA, you must have generated VTAM support in your VSE operating system and you must have included the corresponding VTAM sublibrary in the phase search chain of the VSE/POWER partition. This appendix concentrates on the LOGON mode (LOGMODE) table to be defined during the VTAM generation. One entry is required in the LOGMODE table for every individual group of sessions with identical VTAM BIND characteristics.

The LOGMODE table, which must be cataloged in the VTAM-used sublibrary, contains the BIND parameter specifications as required for every individual group of sessions. As a remote operator, you must specify the name of the appropriate entry in the LOGMODE table when you issue the LOGON command. For details on the BIND parameters, see *VTAM Network Implementation Guide* and *VTAM Resource Definition Reference* .

The example in Figure 9 shows a definition of a LOGMODE table entry by means of the MODEENT macro, as supported by VSE/POWER. Note that the continuation characters that must be specified in column 72 have been omitted in the example.

```
                                                Byte No.
                                                in BIND
username MODETAB
username MODEENT LOGMODE=name,

         FMPROF=X'03',                            2
         TSPROF=X'03',                            3
         PRIPROT=X'A3',                           4
                =X'A1', (without compression LST,PUN) 4
         SECPROT=X'A1',                           5
         COMPROT=X'7080',                        6,7
                =X'7880', (with ASCII for 3770 only) 6,7
         RUSIZES=X'8585'                         8,9
```

Figure 9. LOGON Mode Table Coding Example

The BIND parameters for workstations that support presentation services are shown in Figure 10 on page 112. This applies, for example, to 3790 or 3777 workstations. The string of 12 hexadecimal values corresponds to bytes 14 through 25 of the BIND parameters.

`RUSIZE=X'8585'`

specifies an RUSIZE of $8*2^5 = 256$ for both inbound and outbound data.

LOGON Mode and VTAM BIND

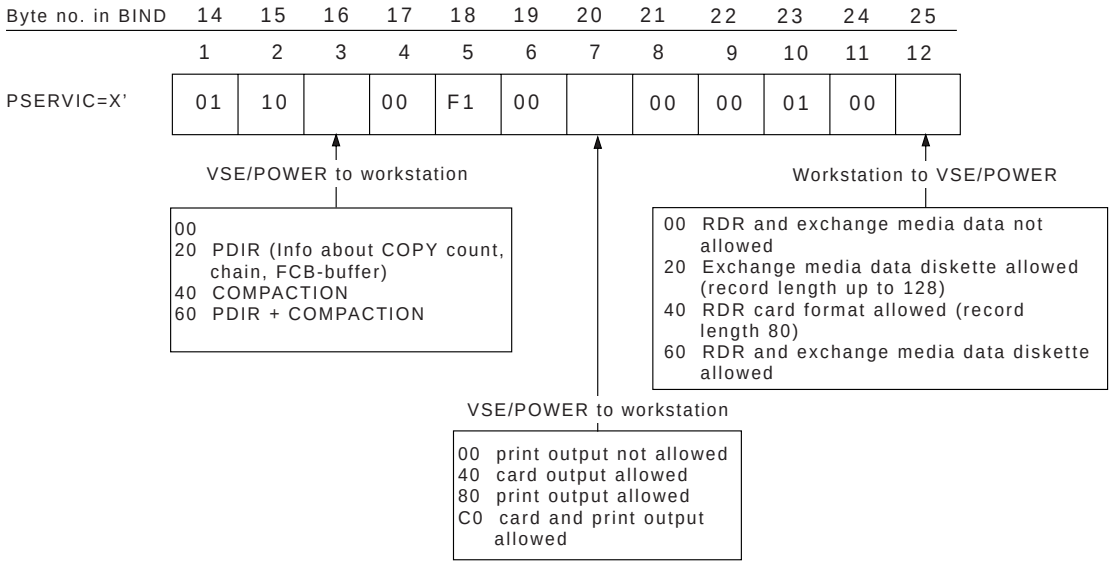


Figure 10. BIND Parameters for the Presentation Services

Appendix B. VTAM Sense Data

Figure 11 summarizes the VTAM sense data for VSE/POWER RJE,SNA support.

Type of Error	Sense Data 'zz'=	Description
Path Error (X'80')	X'04'	Unrecognized DAF
	X'07'	Segmenting error
	X'09'	DAF not active
State Error (X'20')	X'01'	Sequence error
	X'02'	Chaining
	X'03'	Bracket
	X'05'	Data traffic state reset
Request Error (X'10')	X'01'	RU data error (e.g. character code which is not a valid SCS character)
	X'02'	RU length error
	X'03'	Function not supported
	X'05'	Parameter error
	X'07'	Category not supported
	X'08'	Invalid FM header
Request Reject (X'08')	X'02'	Intervention required
	X'05'	Session limit exceeded
	X'0A'	Permission rejected
	X'0B'	Bracket race error
	X'11'	Break
	X'12'	Resource not available
	X'13'	Bracket bid reject – no RTR
	X'1B'	Receiver in transmit mode
	X'1C'	Function not executable
	X'21'	Invalid session parameters
	X'25'	Component not available
	X'26'	FM function not supported by the receiver

For more details concerning the VTAM sense information, refer to *VTAM Programming*.

Figure 11. Sense Data for SNA Support

Appendix C. RJE,SNA I/O Specifications

This appendix describes the major functions of VSE/POWER RJE,SNA with respect to the handling of input and output information. Data directed from a peripheral device to the host system is referred to as inbound data; information directed from the host system to a peripheral device is called outbound data.

VSE/POWER processes the following types of inbound data:

- Console data
- Card data

In the outbound direction, the following information can be processed:

- Print data
- Punch data
- Console data

The following sections discuss the handling characteristics for these types of data. Additionally, a summary of the support for Data Flow Control (DFC) requests is also provided.

See Figure 15 on page 121 for a support summary of the VSE/POWER RJE,SNA data communication facilities, Figure 16 on page 121 for a summary of the SNA character string (SCS) control characters supported by VSE/POWER RJE,SNA, and Figure 17 on page 122 for an overview of the data stream interruptions supported by VSE/POWER for SNA terminals.

For information on compaction and/or compression, see *VSE/POWER Administration and Operation*.

Inbound Console Data

VSE/POWER assumes that inbound console data exclusively consists of commands, and treats this information as such. It deblocks every request/response unit (RU) into 80-byte images using the same scanning algorithm as described in “Inbound Card Data.” Inbound console data may be transparent or nontransparent however VSE/POWER does not support compression for inbound console data.

Inbound Card Data

Inbound card data consists of one or more jobs, delimited either by VSE job control job delimiter statements (// JOB and /&) or by VSE/POWER JECL job delimiter statements (* $$ JOB and * $$ EOJ). Figure 12 and Figure 13 on page 116 give examples of these two types of inbound card data streams.

```
// JOB A                          Start job
.
.
.
/&                                End job
// JOB B                          Start job
.
.
.
/&                                End job
* .. START LST,class              See Note
* .. START PUN,class
* .. DISPLAY RDR,class
// JOB C                          Start job
// EXEC PGM
data
.
.

.
/*
/&                                End job
```

Figure 12. Inbound Card Data with VSE JCL Job Delimiters

Note: You may enter remote operator commands punched in cards; however, these will only be recognized and acted upon when they are submitted between VSE or VSE/POWER job boundaries.

```
* $$ JOB                          Start job
.
.
.
* $$ EOJ                          End job
* .. START LST,class              See Note
* .. START PUN,class
* .. DISPLAY RDR,class
* $$ JOB                          Start job
// JOB A
.
.
.
/&
// JOB B
// EXEC PGM
data
.
.

.
/*
/&
* $$ EOJ                          End job
```

Figure 13. Inbound Card Data with VSE/POWER JECL Job Delimiters

Note: You may enter remote operator commands punched in cards; however, these will only be recognized and acted upon when they are submitted between VSE or VSE/POWER job boundaries.

VSE/POWER RJE operator commands and JECL statements are restricted in length. Up to 72 bytes are accepted, and the trailing data is truncated.

Inbound card data may be transmitted from a card reader or a disk (optional device on certain workstations).

If VSE/POWER does not encounter a valid job delimiter (a /& or an * $$ EOJ statement) at the end of inbound data transmission (either a /& or an * $$ EOJ statement), it adds the appropriate job delimiter. Then the job is placed in the hold queue, and a message is sent to the originating remote operator stating the disposition of the job. The operator may then issue a command to release or to delete this job.

Data from a workstation is transmitted in the form of request/response units (RUs), which may be up to 256 bytes long. The last byte of a function management header (FMH1), which is sent in front of card or exchange media data, contains the logical data record length. This field is named ERCL. If ERCL is a value between 0 and 80, card image is assumed, if it is between 81 and 128, the logical data record length is used, as defined. VSE/POWER deblocks every RU and creates logical records with the defined length or card image using the following algorithm:

1. The first bytes of the RU, as defined by field ERCL, are scanned for a record delimiter (SCS character).
2. If no record delimiter is detected, an interchange record separator (IRS) is assumed to follow the logical data record.
3. If the next byte (ERCL+1) is a record delimiter, it is ignored and the next logical record is assumed to start with byte ERCL+1.
4. If the byte ERCL+1 is not a record delimiter, this byte is assumed to be the first byte of the next logical record.
5. If a record delimiter is found before the logical data record is scanned, this delimiter is discarded and the record is padded with blanks to the given record length. The byte following the record delimiter is considered to be the first byte of the next logical record.

Outbound Print Data

For print jobs, VSE/POWER supports the following SCS (SNA character string) functions:

1. SELECT CHANNEL
2. FORMS FEED
3. CARRIAGE RETURN
4. NEW LINE

These functions are briefly discussed below.

SELECT CHANNEL

If the request was to skip to channel nn after printing, the following command is inserted after a print line:

```
SELECT CHANNEL nn   (SELnn), X'04nn'
```

The following codes apply:

Channel	Hex. Representation
1	X'81' see (1)
2	X'82'
3	X'83'
4	X'84'
5	X'85'
6	X'86'
7	X'87'
8	X'88'
9	X'89'
10	X'7A'
11	X'7B'
12	X'7C'

(1) If SEL01 is specified, this value is converted to, and transmitted as, the FORMS FEED character (X'0C').

FORMS FEED

Instead of SELECT CHANNEL 1, the following command is transmitted:

```
FORMS FEED (FF), X'0C'
```

CARRIAGE RETURN

If the request was “printing with no space,” the following command is inserted after the print line:

```
CARRIAGE RETURN (CR), X'0D'
```

NEW LINE

Depending on whether the request was to insert one line before or after printing, the following command is inserted before or after the print line:

```
NEW LINE (NL), X'15'
```

If two or more blank lines are requested, the appropriate number of NL commands are inserted.

Notes:

1. VSE/POWER does not support the Select Vertical Format (SVF) feature. Therefore, it is the responsibility of the remote operator to set up the vertical tab tables at the remote workstation. However, the FCB name is sent if PDIR (peripheral data stream information record) is supported and if the name has been specified in the * $$ LST statement.
2. The maximum logical record length is 132 bytes by default and can be set in the range from 132 to 512 bytes for each remote workstation using the PRMT parameter MAXRECL=nnn. For more information, see *VSE/POWER Administration and Operation*.

Outbound Punch Data

Outbound punch data consists of one or more punch jobs from the output class specified in the START PUN or START PUN,class command by the remote operator.

The punch data stream is transmitted in transparent mode unless ASCII was specified in the BIND parameters (see Appendix A) for that workstation. Compression and compaction are not supported for punch output.

Each logical record is preceded by a TRN byte and a 1-byte binary count indicating the number of bytes of transparent data. An IRS character follows every logical record. The TRN and the IRS characters are the only two SCS characters supported for punch output.

Outbound Console Data

Outbound console data consists of messages. The message processor uses the NL character to properly format every message. The NL character is the only SCS character used by the message processor.

Data Flow Control (DFC) Requests

Figure 14 shows the DFC requests supported for both inbound and outbound SNA support (FM Profile 3 support).

DFC Request	Inbound (SAU)	Outbound (PAU)
CANCEL	YES	YES
SIGNAL (1)	YES	NO
LUSTAT	YES	N/A
CHASE	NO	NO
SHUTD	N/A	NO
SHUTC	NO	N/A
RSHUTD (1)	YES	N/A
BID	N/A	NO
RTR	NO	N/A

(1) Expedited and handled by the DFASY exit routine in IPW$$VE.

Figure 14. DFC Request Support for SNA

Inbound DFC Request

CANCEL CANCEL may be received at any time. If received during in-chain state, VSE/POWER discards the current job being received, that is, VSE/POWER does not place it into the input queue and frees the resources. A positive response is sent to CANCEL. If received during between-chain state, VSE/POWER responds positively to CANCEL but does not take any further action.

SIGNAL SIGNAL indicates a request for change in direction. If outbound processing is performed, VSE/POWER forces end-of-chain and sends CD with FMH1 indicating suspend.

If VSE/POWER is in receive or standby state, SIGNAL is ignored. The positive response to SIGNAL is sent by VTAM automatically.

LUSTAT The following LU-status codes are supported by VSE/POWER:

X'0001xx00'	Component now available
X'081Cxx00'	Component failure: permanent error for an outbound device

where xx = device selection byte of FMH1.

All other codes and conditions are negatively responded to; the outbound processor sends ADS (if in DS state) and terminates.

CHASE CHASE is not supported. A negative response indicating “Function not supported” is returned.

SHUTC “Shutdown Complete” is not supported. This should never be received as it is only returned in response to SHUTD which is not sent by VSE/POWER.

RSHUTD “Request Shutdown” is interpreted by VSE/POWER as a request for CLEAR,UNBIND when the currently active processor completes.

The inbound processor waits for an FM header indicating abnormal end or end data stream with EB or CD.

The outbound processor completes the sending of the current job or jobs and any pending messages and then terminates the session.

Outbound DFC Request

CANCEL CANCEL is sent by the outbound processor whenever a negative response is received, and during in-chain state. There are no other conditions under which VSE/POWER sends CANCEL.

VSE/POWER RJE,SNA Facilities	Inbound Data		Outbound Data		
	Console	Card	Print	Punch	Console
Compression	No	No	Yes Note 1	No	No
Compaction	No	No	Yes Note 1	No	No
RU Spanning	No	No	Yes	No	No
ASCII Characters	Yes	Yes	Yes	Yes	Yes
Truncate Blanks	Yes Note 2	Yes Note 2	No	Yes	-
Transparency	Yes Note 1	Yes Note 1	No	Yes Note 1	No
FMH Type	1 and default	1	1,2,3	1	Default
Note 1: If ASCII is not specified. Note 2: Depending on the workstation.					

Figure 15. Data Communication Facilities with VSE/POWER RJE,SNA

VSE/POWER SNA SCS (SNA Character String) Control Characters Supported		Data Inbound to Host System		Data Outbound from Host System		
Character	Value	Card	Console	Punch	Print	Console
New Line (NL)	X'15'	Yes	Yes	No	Yes	Yes
Carriage Return (CR)	X'0D'	Yes	Yes	No	Yes	No
Forms Feed (FF)	X'0C'	Yes	Yes	No	Yes	No
Interchange Record Separator (IRS)	X'1E'	Yes	Yes	Yes	No	No
Select Channel (SEL)	X'04xx'	No	No	No	Yes	No
Transparency (TRN) if ASCII not present	X'35'	Yes	Yes	Yes	No	No
Request New Line (RNL)	X'06'	Yes	Yes	No	No	No

Figure 16. SCS Control Characters with IBM VSE/POWER RJE,SNA

Interrupt of	Interrupt by: Inbound Data		Outbound Data		
	Console	Card	Print	Punch	Console
Inbound data					
Console	-	No	No	No	No
Card	Yes (1)	-	No	No	No
Outbound data					
Print	Yes	Yes	-	No	Yes (2)
Punch	Yes	Yes	No	-	Yes
Console	No	No	No	No	-
Outbound data already interrupted by inbound card data					
Print	Yes (1)	No	-	No	No
Punch	Yes (3)	No	No	-	No

(1) Function not available for the 3770.
(2) If CONSOLE=YES in PRMT macro.
(3) Function not available for the 3770 and 3790.

Figure 17. Data Interruptions with IBM VSE/POWER RJE,SNA

Appendix D. RJE,BSC Telecommunication Trace

VSE/POWER provides a combined I/O and buffer trace which helps the system programmer or IBM service personnel to find the cause of a failure.

With the operator's console log and a dump, the output from the telecommunication trace area provides enough information to locate internal RJE,BSC problems more easily and permits the reconstruction of I/O sequences.

A trace record is written for the following event:

RJE,BSC I/O completed

The trace records generated by VSE/POWER are recorded in wraparound mode in main storage. The amount of storage allocated for the trace table is specified in the TRACESZ=xxx parameter of the POWER macro at generation time. The value specified for TRACESZ should ensure that information is not destroyed because of wrapping in the trace table. The value should also reflect the amount of storage available.

The operator activates the trace recording for an RJE,BSC line by specifying the TRACE operand in the PSTART command. The trace recording remains active until the RJE,BSC line is stopped.

Every RJE,BSC trace record is 256 bytes long and is described in “Format of the RJE,BSC Trace Record” on page 124.

The trace records can be examined by displaying or taking a dump of the main storage location containing the trace area.

Optionally, whenever the trace area is full, it is written onto the VSE DUMP library. The operator is informed when a trace area is successfully written into the user defined DUMP library. The dump members can then be printed by the appropriate VSE utility. Trace logging is requested by means of UPSI 001 at VSE/POWER startup time or can be dynamically requested while VSE/POWER is running by entering the PSTART DUMPTR command. The last part of the trace is dumped when the line is stopped.

The telecommunication trace area is divided into two parts, referred to as the primary and alternate trace areas. Both trace areas have the same size (integer number of pages). When the primary trace area is full, VSE/POWER automatically switches to the alternate trace area and starts filling that up. If now the alternate trace area is filled up, the primary trace area is addressed again and used for recording.

The trace area can be found by first locating the trace information block (TIB). The trace information block contains, among other things, a pointer to a two-word trace area descriptor of the trace area currently in use at displacement X'14'. The first word of the trace area descriptor contains the trace area start address, while the second word contains the end address. The pointer to the next free trace area entry is stored at displacement X'50' of the TIB. The PDISPLAY TRINFO command can be used to get the start and end addresses of the entire telecommunication trace area as well as the current free trace area address; for example:

```
IR46I  TELETR:  BEGIN=003D1000 END=003D5FFF CURR=003D1000
```

Format of the RJE,BSC Trace Record

Bytes (Hex)	Data Length	LCB Field	Data Description
00-0F	16	IOBCCB	CCB
10-37	40	IOBCCW1	Last 5 executed CCWs
38-77	64	-	Data sent and received
78-7B	4	-	Address of last executed CCW in trace
7C-7D	2	IOBSNS0	Sense bytes 1 and 2
7E	1	LCBLREQ	Last request code
7F	1	LCBREQF	Current request code
80	1	LCBSCOD	Stop code
81-83	3	LCBFLG1-3	LCB flag bytes 1, 2 and 3
84-85	2	LCBPUBA	PUB pointer
86-87	2	LCBFLG4-5	LCB flag bytes 4 and 5
88-89	2	LCBXCNT	Transmission count
8A-8B	2	LCBTCNT	Session timeout count
8C-8D	2	LCBECNT	Error count
8E-8F	2	LCBTIMC	Timeout count
90-91	2	LCBICNT	Invalid response count
92	1	LCBTOCT	Timeout count (pre-signon)
93	1	LCBTERR	Terminal error count
94	1	LCBRTRY	Retry count for unit check
95	1	LCBRCNT	Retry count
96-97	2	-	Unused
98	1	LCBMSGI	Message index (remote message queue)
99	1	LCBLIMO	Line mode control byte
9A	1	LCBOUSW	Output queued indicator
9B	1	LCBACT	Activity control byte
9C-A1	6	LCBLPU	LCB PLINE entry
A2-B9	24	LCBDRM	LCB PRMT entry (starts with Remote-ID)
BA-BB	2	-	Unused
BC-C3	8	-	Time when channel end processed (STCK)
C4-C4	1	LCBTSKEJ	Last task to set TURNEOJ
C5-D3	15	-	Unused
D4-D7	4	DCT1LST1	LST DCT flags
D8-DB	4	DCT1PST1	PUN DCT flags
DC-DF	4	DCT1MST1	MSG DCT flags
E0-E3	4	DCT1RST1	RDR DCT flags
E4-EF	12	LCBRBFAR	Reader buffer status
F0-FB	12	LCBWBFAR	Writer buffer status
FC-FE	3	LCBDVAD	Line address (cuu)
FF	1	LCBRMID	Binary Remote-ID

The following illustrates the layout of a trace record:

```
00xxxx00 <----------CCB--------------------> <----1st-CCW----> <----2nd-CCW---->

00xxxx20 <----3rd-CCW----> <----4th-CCW----> <----5th-CCW----> <--data-begin-of-

00xxxx40 -1st-CCW(see-1)-> <-data-end(see-2)-of-1st-CCW------> <--data-begin-of-

00xxxx60 -2nd-CCW--------> <-data-end--------of-2nd-CCW------> CCW-addr SNS LREQ

00xxxx80 <---------flags-and-counts----------------------------------> <-PLINE-

00xxxxA0 ---><rem-id--------PRMT---------------------------------->     <-time--

00xxxxC0 -stamp-> <><-------unused-----------------> DCT--LST DCT--PUN DCT--MSG

00xxxxE0 DCT--RDR <-reader-buffer-status---> <-writer-buffer-status---> <-CUU>id


1) Only data of READ and WRITE CCWs is recorded in the trace.
2) If data length is 16 bytes or less, 'data-end' is dropped and 'data-begin' starts here.
3) "xxxx" represents an address-dependent hexadecimal string.
```

RJE,BSC Telecommunication Trace

Glossary

This glossary includes terms and definitions related primarily to IBM VSE/POWER. If you do not find the term you are looking for, refer to the index of this book or to the *IBM Dictionary of Computing* New York: McGraw-Hill, 1994.

The glossary includes definitions with:

- Symbol * where there is a one-to-one copy from the IBM Dictionary of Computing.
- Symbol (A) from the *American National Dictionary for Information Processing Systems* copyright 1982 by the Computer and Business Equipment Manufacturers Association (CBEMA). Copies may be purchased from the American National Standards Institute, 1430 Broadway, New York, New York 10018. Definitions are identified by symbol (A) after definition.
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The following cross-references are used:

- Contrast with. This refers to a term that has an opposed or substantively different meaning.
- Synonym for. This indicates that the term has the same meaning as a preferred term, which is defined in its proper place in the dictionary.
- Synonymous with. This is a backward reference from a defined term to all other terms that have the same meaning.
- See. This refers the reader to multiple-word terms that have the same last word.
- See also. This refers the reader to related terms that have a related, but not synonymous, meaning.

address. (1) The location in the storage of a computer where data are stored. (2) In data communication, the unique code assigned to every device or work station connected to a network.

application program. A program written for or by a user that applies directly to the user's work.

assembler. A computer program used to assemble.

*** autostart**. A facility that starts up VSE/POWER with little or no operator involvement.

binary synchronous communication (BSC). Method of telecommunication using binary synchronous line discipline.

block. Usually, a block consists of several records of a file that are transmitted as a unit. But if records are very large, a block can also be part of a record only. See also control block.

BSC. Binary synchronous communication.

buffer. An area of storage temporarily reserved for input or output operations; an area into which data is read or from which data is written.

byte. Eight adjacent binary digits that are operated upon as a unit and that constitute the smallest addressable unit of information within a computer system. Normally, it represents a stored character.

*** cataloged procedure**. A set of control statements placed in a library and retrievable by name.

class. In VSE/POWER, a means of grouping output or jobs that require the same set of resources.

CMS. Conversational monitor system.

compile. To translate a source program into an executable program (object program). See also assembler.

control block. An area within a program or a routine defined for the purpose of storing and maintaining control information.

*** conversational monitor system (CMS)**. A virtual machine operating system that provides general interactive time sharing, problem solving, and program development capabilities and operates under the control of VM/SP.

default value. A value assumed by the program when no value has been specified by the user.

device. A hardware component of a computer system with a specific purpose.

*** device address**. (1) The identification of an input/output device by its channel and unit number. (2) In data communication, the identification of any

device to which data can be sent or from which data can be received.

disk. Loosely, a magnetic disk unit.

diskette. A flexible magnetic disk enclosed in a protective container. (I) (A) Synonymous with floppy disk.

disposition. A means of indicating to VSE/POWER how job input and output is to be handled. A job may, for example, be deleted or kept after processing.

exit. A routine, normally user-supplied, that receives control from the system when a certain event occurs (abnormal-end exit, for example).

file. A named set of records stored or processed as a unit. (T)

*** foreground partition**. A space of virtual storage in which programs are executed under control of the system. By default, a foreground partition has a higher processing priority than the background partition.

generate. To produce a computer program by selecting subsets of standardized code under the control of parameters. (A)

generation. See macro generation.

hard copy. A copy of machine output printed on paper in a visually readable form.

hard-copy file. A system file on disk, used to log all lines of communication between the system and the operator at the system console, to be printed on request.

input. (1) Information or data to be processed by a program. (2) Pertaining to a resource that serves to process input data, for example, input buffer. Contrast with output.

I/O device. A device in a data processing system by means of which data may be entered into the system, received from the system, or both.

JCL. Job Control Language.

JECL. Job Entry Control Language.

job. One program or a group of related programs called job steps complete with the JCL statements necessary for a particular run. A job is identified in the job stream by a JOB statement followed by one EXEC statement for each of the programs or job steps.

job accounting. A system function that lists how much every job step uses of the different system resources.

job control language (JCL). A language that serves to prepare a job or each job step of a job to be run. Some of its functions are: to determine the I/O devices to be used, set switches for program use, log (or print) its own statements, fetch the first phase of each job step.

job control statement. A particular statement of JCL.

job entry control language (JECL). A control language that allows the programmer to specify how VSE/POWER should handle a job.

job stream. The sequence of jobs as submitted to an operating system.

library. Disk storage space in the system where programs in various forms and storage dumps are stored. The form of a program is indicated by its type ID such as object module, phase, or procedure. Source code is identified by a one-character type ID of which some are reserved. A library consists of at least one sublibrary which can contain any type of member. Storage dumps from a library can be viewed interactively.

*** load**. To bring a program phase from a library into virtual storage to run it.

logical unit (LU). (1) A name used in programming to represent an I/O device address. (2) In SNA, a port through which a user accesses the SNA network, a) to communicate with another user and b) to access the functions of the SSCP. An LU can support at least two sessions -- one with an SSCP and one with another LU -- and may be capable of supporting many sessions with other LUs. See also *network addressable unit (NAU)*, *peripheral LU*, *physical unit (PU)*, *system services control point (SSCP)*, *primary logical unit (PLU)*, and *secondary logical unit (SLU)*. Contrast with *physical unit (PU)*.

macro (instruction). (1) In assembler programming, a user-invented assembler statement that causes the assembler to process a set of statements defined previously in the macro definition. (2) A sequence of VSE/ICCF commands defined to cause a sequence of certain actions to be performed in response to one request.

macro definition. A set of statements and instructions that defines the name of, format of, and conditions for generating a sequence of assembler statements and machine instructions from a single source statement.

macro expansion. See macro generation.

macro generation. An assembler operation by which a macro instruction gets replaced in the program by the statements of its definition. It takes place before assembly. Synonymous with macro expansion.

message. (1) In VSE, a communication sent from a program to the operator or user. It can appear on a console, a display terminal or on a printout. (2) In telecommunication, a logical set of data being transmitted from one node to another.

NCP. Network Control Program.

network. (1) An arrangement of nodes (data stations) and connecting branches. (2) The assembly of equipment through which connections are made between data stations.

Network Control Program (NCP). An IBM program that provides communication controller support for single-domain, multiple-domain, and interconnected network capability.

*** node**. (1) In SNA, an end point of a link or junction common to several links in a network. Nodes can be distributed to host processors, communication controllers, cluster controllers, or terminals. Nodes can vary in routing and other functional capabilities. (2) In VTAM, a point in a network defined by a symbolic name. Synonymous with network node.

*** operator command**. A statement to a control program, issued via a console or terminal. It causes the control program to provide requested information, alter normal operations, initiate new operations, or end existing operations.

*** operator console**. A display console used for communication between the operator and the system.

output. Data that has been processed and is transported from storage to an output device.

*** partition**. A division of the virtual address area available for running programs.

*** password**. In computer security, a string of characters known to the computer system and a user. He must specify it to gain full or limited access to the system and to the data stored in it.

PNET. Programming support available with VSE/POWER; it provides for the transmission of selected jobs, operator commands, messages, and program output between the nodes of a network.

printer. A device that writes output data from a system on paper or similar media.

priority. A rank assigned to a partition or a task that determines its precedence in receiving system resources.

procedure. See cataloged procedure.

*** processing**. The performance of logical operations and calculations on data, including the temporary retention of data in processor storage while this data is being operated upon.

punch. (1) To make holes in some data medium according to a signal code and t hus save data on that medium. (2) A machine (output device) to punch 80-column punch cards.

*** queue**. (1) A line or list formed by items in a system waiting for service; for example, tasks to be performed or messages to be transmitted in a network. (2) To arrange in, or form, a queue.

*** read**. To acquire or interpret data from a storage device, from a data medium, or from another source. (I) (A)

reader. An input device that reads data that is punched into cards or is written or printed on paper.

*** record**. A collection of related data or words, treated as a unit.

remote. Pertaining to a system, program, or device that is accessed through a telecommunication line. Contrast with local. Synonym for link-attached.

*** remote job entry (RJE)**. Submission of jobs through an input unit that has access to a computer through a data link.

RJE. Remote job entry.

RJE work station. Any work station that is used for remote job submission and for the remote retrieval of output.

*** routine**. Part of a program, or a sequence of instructions called by a program, that may have some general or frequent use. (I) (A)

*** routing**. The assignment of the path by which a message will reach its destination.

*** run**. (1) A performance of one or more jobs. (2) A performance of one or more programs. (3) To cause a program or job to be performed.

schedule. To select a program or task for getting control over the processor.

*** shared spooling**. A function that permits the VSE/POWER account file, data file, and queue file to be shared among several computer systems with VSE/POWER.

*** shutdown**. The process of ending operation of a system or a subsystem, following a defined procedure.

SNA. Systems Network Architecture.

*** spooling**. Reading and writing input and output streams on an intermediate device in a format convenient for later processing or output.

SSP. System Support Program.

startup. The process of performing IPL of the operating system and of getting all subsystems and application programs ready for operation.

station. (1) One of the input or output points of a network that uses communication facilities; for example, the telephone set in the telephone system or the point where the business machine interfaces with the channel on a leased private line. (2) One or more computers, terminals, or devices at a particular location.

storage. A device, or part of a device, that can retain data. See also auxiliary storage, processor storage, virtual storage.

submit. A function that passes a job to the system for processing.

*** subsystem**. A secondary or subordinate system or program, usually capable of operating independently of, or asynchronously with, the operating system.

Systems Network Architecture (SNA). The description of the logical structure, formats, protocols, and operational sequences for transmitting information units through and controlling the configuration and operation of networks.

System Support Program (SSP). An IBM program, made up of a collection of utilities and small programs, that supports the operation of the NCP.

*** task**. The basic unit of synchronous program execution. A task competes with other tasks for system resources such as processing time and I/O channels.

terminal. A point in a system or network at which data can either enter or leave. (A) Usually a display screen with a keyboard.

time event scheduling support. In VSE/POWER, the time event scheduling support allows to schedule jobs for processing in a partition at a predefined time, once or repetitively. The time event scheduling operands of the * $$ JOB statement are used to specify the desired scheduling time.

trace. To record a series of events as they occur. A record of specified events during the run of a program. A program to produce such a record.

*** transmit**. To send data from one place for reception elsewhere.

virtual storage. Addressable space image for the user from which instructions and data are mapped into processor storage locations.

VSE/ESA (VSE/Enterprise Systems Architecture). The most advanced VSE system currently available.

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VSE Central Functions
VSE/POWER Remote Job Entry
Version 6 Release 4

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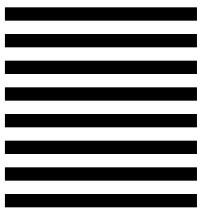

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