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Advanced Communications Function for VTAM (ACF/VTAM)

Program Product

Macro Language Reference

ACF/VTAM Release 1

Program Numbers 5746-RC3 (DOS/VS)
5735-RC2 (OS/VS)

IBM

Second Edition (December 1978)

This is a major revision of, and obsoletes, SC38-0261-0 and Technical Newsletters SN31-0694 (dated January 30, 1978) and SN31-0820 (dated June 30, 1978). This edition applies to the initial DOS/VS version of ACF/VTAM (Program Number 5746-RC3) and to the initial OS/VS version of ACF/VTAM for OS/VS1, OS/VS2 SVS, and OS/VS2 MVS (Program Number 5735-RC2). Information about the optional Multisystem Networking Facility of ACF/VTAM is included. Information about the optional ACF/VTAM Encrypt/Decrypt Feature, available for OS/VS1 and OS/VS2 MVS only, is also included.

Changes are continually made to the information in IBM system publications. Before using this publication in connection with the operation of IBM systems, consult the *IBM System/370 Bibliography,* GC20-0001, to find out which additions are applicable and current.

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Summary of Amendments (December, 1978) to SC38-0261-0 by Revision SC38-0261-1

Advanced Communication Function for VTAM (ACF/VTAM) for DOS/VS, OS/VS1, OS/VS2 SVS, and OS/VS2 MVS

This revision incorporates Technical Newsletters SN31-0694 (dated January 30, 1978), and SN31-0820 (dated June 30, 1978).

Minor technical and editorial changes have also been included in this revision.

Summary of Amendments (June 30, 1978) to SC38-0261-0 by TNL SN31-0820

Advanced Communication Function for VTAM (ACF/VTAM) for DOS/VS, OS/VS1, OS/VS2 SVS, and OS/VS2 MVS

New Program Function

For secondary logical units, ACF/VTAM specifies a new default RU size.

Summary of Amendments (January 30, 1978) to SC38-0261-0 by TNL SN31-0694

Advanced Communication Function for VTAM (ACF/VTAM) for DOS/VS, OS/VS1, OS/VS2 SVS, and OS/VS2 MVS

New Program Feature

Information about the optional Encrypt/Decrypt Feature is included. This feature applies to OS/VS1 and OS/VS2 MVS only.

Changed Documentation

Correction and clarification of the TS usage field description in Appendix J.

Minor technical and editorial changes have been included in this TNL.

Preface

This book is a reference manual that contains detailed information on the macro instructions used with the Advanced Communications Function for the Virtual Telecommunications Access Method (ACF/VTAM). The macro instructions are used to write the data communication portions of application programs that communicate with terminals and logical units within an ACF/VTAM domain, in a TCAM domain, or in another ACF/VTAM domain. This manual provides the specifications needed to code such programs.

This reference manual has been designed to be used in conjunction with the *ACF/VTAM Macro Language Guide*, SC38-0256, which further describes the various macro instructions and explains programming uses and considerations. Additional information may be found in another companion publication, the *ACF/VTAM Program Operator Guide*, SC38-0257.

The beginning of this book lists the services provided by ACF/VTAM and indicates the macro instructions that are used to request each service. The beginning of the book also explains the conventions used throughout the book to indicate how the macro instructions are to be coded.

The rest of the book (except for the appendixes) contains detailed descriptions of the macro instructions, arranged in alphabetic order. Each description is presented in a fixed format with the information about each macro instruction presented in the same sequence.

With few exceptions, ACF/VTAM macro instructions can be coded without regard for the particular operating sytem (DOS/VS, OS/VS1, OS/VS2 SVS or OS/VS2 MVS) under which the program will be running. When there is an exception to this, that exception is identified in the macro instruction description.

Appendix A is a summary of the control block fields you use with each macro instruction. Once you have become familiar with the macro instructions, you will be able to use this appendix as a quick reference source.

Appendix B indicates the communication control characters that ACF/VTAM inserts into outgoing data and recognizes in incoming data. This information is shown for each BSC and start-stop device supported by ACF/VTAM.

Appendixes C and D describe the return codes that are passed to the application program upon completion of each ACF/VTAM macro instruction.

Appendixes E and F describe the operand formats and special forms of the GENCB, MODCB, SHOWCB, and TESTCB macro instructions.

Appendix G summarizes the contents of the general-purpose registers upon completion of ACF/VTAM macro instructions.

Appendix H shows the format of the application program control blocks and the DSECTs needed to access these control blocks with assembler instructions.

Appendix I contains information relating to specific devices and the way the ACF/VTAM macro instructions should be used with the devices.

Appendix J describes the session parameters and shows the format of the bind area and the DSECT needed to access the information in it.

The appendixes are followed by a glossary and an index. The index includes page numbers for all of the macro instruction operands and all of the fixed values that can be supplied with the operands.

The reader should be familiar with *ACF/VTAM General Information,* GC38-0254, and with those parts of *OS/VS and DOS/VS Assembler Language,* GC33-4010, that explain the rules for coding assembler expressions. The reader should also be familiar with the characteristics of the devices with which the program will be communicating, with the SNA protocols (if SDLC) or the line discipline (if start-stop or BSC) that will be used with each one, and with data communication concepts in general. Those unfamiliar with data communication concepts can read *Introduction to Data Communications Systems,* SR20-4461. The back of that manual contains a bibliography.

A few portions of the ACF/VTAM language cannot be fully utilized without a working knowledge of the network control program of the communications controller.

This publication refers to an *NCP Generation and Utilities Guide* to obtain that information. Because ACF/VTAM can operate with either the ACF version of the network control program (ACF/NCP/VS) or with the latest current level of NCP/VS, this reference is an abbreviation for one of the following books, depending on the NCP being used.

For ACF/NCP/VS users: *IBM 3705 Advanced Communications Function for Network Control Program/VS Generation and Utilities Reference Manual,* SC30-3116.

For NCP/VS users: *IBM 3704 and 3705 Control Program Generation and Utilities Guide and Reference Manual,* GC30-3008.

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Part 1. Introduction

Functions Provided by the ACF/VTAM Macro Instructions

The Advanced Communications Function for the Virtual Telecommunications Access Method (ACF/VTAM) provides an application program running under a virtual storage operating system with the ability to do the following:

- Establish a session with a terminal or logical unit (including another application program)
- Communicate with the terminal or logical unit
- Terminate the session with the terminal or logical unit
- Use the program operator function to display and control the status of the network

Macro Instructions Used to Establish and Terminate a Session

ACF/VTAM provides macro instructions (OPEN, SIMLOGON, SETLOGON, INQUIRE, OPNDST, OPNSEC, REQSESS, TERMSESS, CLSDST, and CLOSE) to enable the application program to do the following:

- Identify the application program to ACF/VTAM and the data communication network (OPEN)
- Simulate a terminal's or logical unit's request for session establishment, so that a user-written routine that handles such requests will be invoked (SIMLOGON)
- Allow logons to be directed at the application program or allow an application program to issue a request for session establishment to another application program; notify ACF/VTAM that the application program is no longer accepting logons or receiving session parameters in its SCIP exit routine (SETLOGON)
- Obtain the device characteristics, session parameters, or logon message of a terminal or logical unit requesting session establishment, or find out how many terminals or logical units are currently in session with the program and how many are waiting for a session to be established (INQUIRE)
- Establish a session with one or more terminals or logical units (OPNDST)
- Accept the session parameters received from an application program and by accepting them establish a session (OPNSEC)
- Request a session with application program (REQSESS)
- Request the session with an application program be terminated (TERMSESS)
- Terminate a session with a terminal or logical unit; optionally request that a session be established to another application program (CLSDST)
- Disconnect the application program from ACF/VTAM and the data communication network (CLOSE)

Macro Instructions Used Only in Record-Mode Sessions

ACF/VTAM provides four I/O macro instructions to communicate with logical units in record-mode sessions. These macro instructions (SEND, RECEIVE, RESETSR, and SESSIONC) enable the application to:

- Send data, a data flow command, or a response to a logical unit (SEND)
- Receive data or a response from a logical unit (RECEIVE)
- Cancel a RECEIVE prematurely; switch a logical unit from continue-any to continue-specific mode or vice versa (RESETSR)
- Send a Request Recovery (RQR), Clear, Set and Test Sequence Number (STSN), Start Data Traffic (SDT), a negative response to a Bind, or a response to an SDT or STSN command to a logical unit (SESSIONC)

Macro Instructions Used Only in Basic-Mode Sessions

ACF/VTAM provides macro instructions (READ, WRITE, RESET, SOLICIT, DO, LDO, and CHANGE) to communicate with non-SNA devices. The basic-mode macros enable the application program to do the following:

- Obtain data from one or a group of terminals and keep the data in ACF/VTAM buffers; repeat this action until a specified amount of data has been received (SOLICIT)
- Using data already obtained from any terminal or from a specified terminal, move the data from ACF/VTAM buffers to an area in user storage (READ)
- Obtain data from a specific terminal and move it directly into user storage (READ)
- Transmit data from an area in program storage to a specified terminal (WRITE)
- Automatically follow an output operation with an input operation (WRITE)
- Cancel an I/O operation prematurely; reset an error lock set for a device (RESET)
- Initiate one or more I/O operations using logical device orders (DO)
- Perform I/O operations that are unique to the System/3, System/370, and certain 3270s that cannot be performed using READ and WRITE (LDO)
- Change the processing options (CHANGE)

Macro Instructions Common to Record-Mode and Basic-Mode Sessions

The macro instructions that are common to record and basic mode enable an application program to:

- Check the status of asynchronous requests (CHECK)
- Execute any request defined by an RPL (EXECRPL)
- Interpret an input sequence (INTRPRET)

Declarative and Manipulative Macro Instructions

ACF/VTAM provides macro instructions that build control blocks and that test, extract, and modify the fields of the control blocks that describe specific I/O operations. These macro instructions enable an application program to:

- Create a control block that identifies the application program to ACF/VTAM and the data communication network (ACB)
- Create a control block containing entry points for routines to be entered when certain events occur, such as attention interruptions, hardware errors, or requests for connection to the application program (EXLST)
- Create a control block that contains the parameters for a connection or data transfer operation (RPL)
- For each terminal and logical unit, create a control block that contains information that affects subsequent conversations with that particular logical unit (NIB)
- Generate any of the above control blocks during program execution rather than program assembly; optionally generate them in dynamically allocated storage (GENCB)
- Test, extract, or modify the fields in these control blocks (TESTCB, SHOWCB, MODCB)

It is a good programming practice to set control block fields in user-written application programs to zero after they are used if the control block is to be reused. Desired operands should be specified or left to system default. ACB, NIB, and RPL fields that are not used by a macro instruction should be set to zero unless otherwise indicated.

Network Operator Macro Instructions

ACF/VTAM provides macro instructions that display and control the status of the network. These macro instructions enable an application program to:

- Send a network operator command to ACF/VTAM (SENDCMD)
- Receive an ACF/VTAM message in reply to a network operator command or receive an unsolicited ACF/VTAM message (RCVCMD)

Categories of ACF/VTAM Macro Instructions

Throughout the macro instruction descriptions and the appendixes of this book, you will encounter the terms *manipulative, declarative, RPL-based,* and *ACB-based,* macro instructions. These terms refer to categories of ACF/VTAM macro instructions that have related functions. Figure 1 shows these categories and identifies the macro instructions that are included in each one.

Register Restrictions on ACF/VTAM Macro Instructions

Registers 2-12 (and only these registers) can be used with the macro instructions described in this book. This restriction applies both to registers used for the macro instruction itself (register notation for macro instruction operands) and to registers the programmer sets and expects to remain unmodified by the macro instruction.

The restriction to registers 2-12 applies regardless of the type of operating system, and regardless of whether the macro is an RPL-based, ACB-based, or manipulative macro instruction.

In addition, register 1 can be used to supply an RPL address for any RPL-based macro instruction. Example: SEND RPL=(1)

Before issuing an executable macro instruction, register 13 must contain the address of an 18-word save area. ACF/VTAM will not modify the contents of register 13. (An executable macro instruction is any ACF/VTAM macro instruction other than ACB, EXLST, RPL, NIB, or LDO.)

There is no error return code that indicates an attempted misuse of registers; ACF/VTAM does not enforce the register restriction in any way. The results of using registers 0, 1, 14, or 15 (other than for the exception cited above) are unpredictable.

Readers interested in a description of how ACF/VTAM uses the restricted registers should refer to the table in Appendix G.

Similarities between ACF/VTAM and VSAM

The Virtual Storage Access Method (VSAM) is an access method for direct access storage devices (DASDs). Like ACF/VTAM, it is available to programs running under virtual storage operating systems. There is considerable similarity between the two access methods with regard to control block names and fields, control block manipulation, and general approach to request handling.

Both access methods use an ACB. The ACF/VTAM ACB essentially represents an application program. In VSAM, however, where the user has no need of an application program control block, the ACB represents the data set and is analogous to a DCB or DTF. Both types of ACBs are, however, objects of the OPEN macro instruction, and VSAM and ACF/VTAM ACBs can be opened with the same macro instruction.

Declarative Macros

ACB EXLST RPL NIB LDO (Basic Mode Only)	These build control blocks during program assembly. They are the only nonexecutable macro instructions.

Manipulative Macros

GENCB MODCB SHOWCB TESTCB	These build and manipulate control blocks blocks during program execution.

ACB-Based Macros

OPEN CLOSE	These open and close the application program's ACB.

RPL-Based Macros

These are used to request connection and data transfer. They all use an RPL and, with the exception of CHECK, permit RPLmodifications to be specified in the macro instruction itself.

Session Establishment Macros

Primary Application Programs Only

- OPNDST
- CLSDST

Secondary Application Only

- REQSESS
- OPNSEC
- TERMSESS

Communication Macros

Record Mode Only

- SEND
- RECEIVE
- RESETSR
- SESSIONC

Basic Mode Only

- SOLICIT
- READ
- WRITE
- RESET
- DO

Macros That Support
Session Establishment
or Communication

- CHANGE (Basic Mode Only)
- CHECK
- EXECRPL
- INQUIRE
- INTRPRET (Primary Application Programs Only)
- SETLOGON
- SIMLOGON (Primary Application Programs Only)

Network Operator Macros

- SENDCMD
- RCVCMD

Figure 1. Categories of ACF/VTAM Macro Instructions

Both types of ACBs can contain pointers to an exit list. Both VSAM and ACF/VTAM exit lists contain addresses of routines to be entered when error conditions occur (LERAD and SYNAD exit routines) and addresses of routines to be entered when special situations occur. The exit list named in a VSAM ACB must contain the names of VSAM exit routines only; the exit list named in an ACF/VTAM ACB must contain the names of ACF/VTAM exit routines only.

Both access methods follow the same general I/O-request procedure: An I/O macro instruction is issued that indicates an RPL. The RPL in turn contains information about the request, such as the location of the I/O work area or whether the request is to be handled synchronously or asynchronously.

Finally, both access methods use the same macro instructions–GENCB, MODCB, TESTCB, and SHOWCB–to generate and manipulate their respective ACB, EXLST, and RPL control blocks.

Although the control blocks are similar in name, function, and (to some extent) content, the control blocks of one access method are not interchangeable with the corresponding control blocks of another.

To make control blocks unique, a special ACF/VTAM operand is used when the control block is generated. By specifying AM=VTAM on the ACB, EXLST, or RPL macro instruction, the control block is generated in ACF/VTAM-compatible form. Omitting this operand causes a VSAM-compatible control block to be built.

Manipulation of ACF/VTAM Control Blocks

The application program control blocks (ACB, EXLST, RPL, and NIB) can be examined and modified in two ways during program execution: The application program can use the manipulative macro instructions (MODCB, TESTCB, or SHOWCB) or it can use IBM-supplied DSECTs.

The manipulative macro instructions are essentially branches to access method routines that perform the control block manipulations specified on the macro. Their advantage is their ease of use and the freedom from reassembly they provide should control block formats be changed in future releases of ACF/VTAM or should you change from one operating system to another. (To avoid reassembly, GENCB must be used in place of ACB, EXLST, RPL, and NIB declarative macros; MODCB, rather than RPL-based macros, must be used to modify all RPLs.)

The DSECTs provide labeled overlays for each of the control blocks for each operating system (the OS/VS1, OS/VS2 SVS, and OS/VS2 MVS ACB, EXLST, and RPL control blocks are identical, and the NIB is identical for all four operating systems). Their advantage is the improved performance (less system overhead) available through user-written assembler instructions. (Their disadvantage is that reassembly may be required for future releases of ACF/VTAM. The impact of reassembly can be lessened, however, by keeping the teleprocessing portions of the application program – that is, the ACF/VTAM macro instructions – separate from the processing portions.) The general use of DSECTs is described in "The DSECT Instruction" in *OS/VS and DOS/VS Assembler Language*, GC33-4010.

The manipulative macro instructions are described alphabetically in this manual; tabulated information about them is contained in Appendixes E and F. The formats and DSECTs for control blocks are described in Appendix H.

Part 2. The ACF/VTAM Macro Instructions

How the Macro Instructions Are Described

First, for an understanding of how macro instructions descriptions are arranged in this book, see Figure 2. The balance of this section explains the conventions used in this figure.

Assembler Format Table

Following each macro instruction description is a three-column table that shows how the macro instruction is to be coded. Since macro instructions are coded in the same format as assembler instructions, the three columns correspond to an assembler instruction's name, operation, and operand fields. This table is subsequently referred to as the macro instruction's assembler format table.

Name	*Operation*	*Operands*

The macro instructions are arranged alphabetically. Each macro has its own section. At the beginning of each section are the name of the macro instruction and a description of its function and use. The remainder of each section contains: an assembler format table, an operand-by-operand description, examples where necessary, and a summary of status information. On each page that pertains to a particular macro instruction, the operation code is shown in the upper left-hand or upper right-hand corner.

Name: The macro instruction name provides a label for the macro instruction. The name, if used, can be specified as any symbolic name valid in the assembler language.

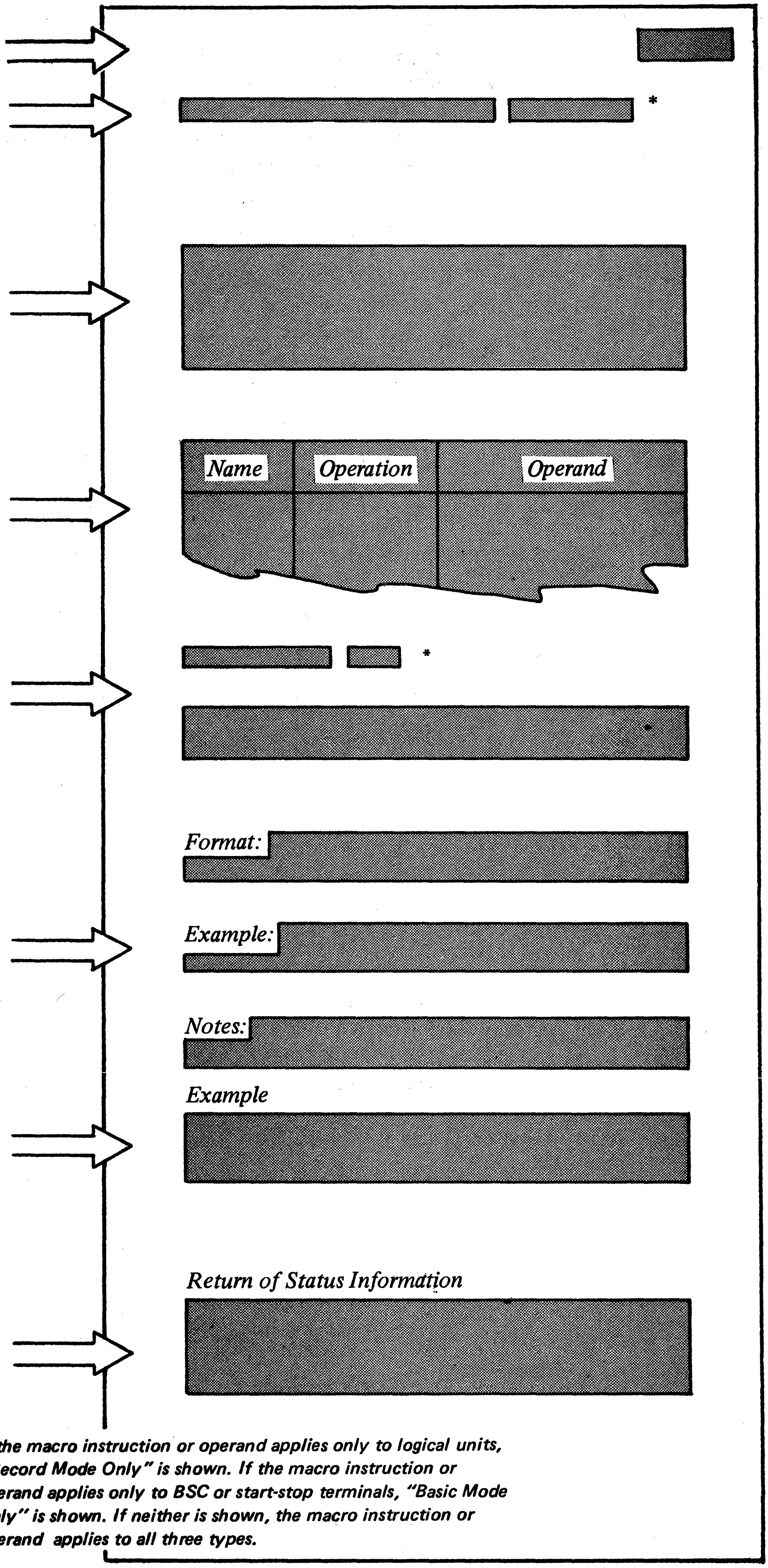
Operation: This field contains the mnemonic operation code of the macro instruction. It is always coded exactly as shown.

Operands: The operands provide information for the macro expansion program in the assembler. Generally, the information provided by the operands is made part of a parameter list provided to ACF/VTAM during program execution. All of the macro instruction's operands are indicated in the operands column of the assembler format table.

Types of Operands: All operands are either *keyword* or *positional* operands. Most of the ACF/VTAM macro instruction operands are keyword operands.

Keyword operands consist of a fixed character string (the operand keyword), an equal sign, and a single or multiple operand value. The presence of the equal sign distinguishes keyword from positional operands. Keyword operands do not have to be coded in the order shown in the operands column. For example, a macro having a LENGTH=*data length* operand and an AREA=*data area address* operand (as indicated in the operands column) could be coded as either

```
AREALEN=132,AREA=WORK
          or
AREA=WORK,AREALEN=132
```



The mnemonic operation code is shown as a page identification.

The above instruction is named and its basic purpose shown.

An explanation tells what the macro instruction does.

A table arranged in assembler format depicts the manner in which the macro instruction is coded.

The table is followed by descriptions of each operand of the macro instruction. Each operand's function is explained.

Following the explanation, special coding restrictions, examples of use, and special programming notes may appear.

The operand descriptions are followed by an example of the macro instruction.

The location of returned information is specified here, and the meaning of the returned information is explained.

**If the macro instruction or operand applies only to logical units, "Record Mode Only" is shown. If the macro instruction or operand applies only to BSC or start-stop terminals, "Basic Mode Only" is shown. If neither is shown, the macro instruction or operand applies to all three types.*

Figure 2. Basic Structure of the Description of Each Macro Instruction

Keyword operands must be separated by commas. If a keyword operand is omitted, the commas that would have been included with it are also omitted.

There are a few instances in the ACF/VTAM macro instructions where more than one value can be coded after the keyword, but parentheses are required to do this. For example, an operand specified as

```
FIELDS= {field name|(field name,...)}
```

can be coded as

```
FIELDS=RECLEN
        or
FIELDS=(RECLEN)
```

when only one field name is used. When more than one field name is used, however, the names must be enclosed in parentheses:

```
FIELDS=(RECLEN,RTNCD,FDBK2)
```

The field names must be separated by commas. If a field name is omitted, the comma that would have been included with it is also omitted. For example, omitting the first field name from the previous example would result in:

```
FIELDS=(RTNCD,FDBK2)
```

Positional operands (used in OPEN and CLOSE macros only) must be coded in the exact order shown in the operands column. Positional operands are separated by commas, as are all operands, but if a positional operand is omitted, the surrounding commas must still be entered. For example, consider a macro that has three positional operands DCB1, INOUT, and ACB1. If all three are used, they are coded as

```
DCB1,INOUT,ACB1
```

but if only DCB1 and ACB1 are wanted, they are coded as

```
DCB1,,ACB1
```

If the last positional operand or operands are omitted, the trailing comma or commas should not be coded.

Operand Notation: A notational scheme is followed in the operands column to show how, when, and where operands can be coded. The notational symbols are never coded.

- A vertical bar (|) means "exclusive or.") For example, A|B means that either A or B (but not both) should be coded. Such alternatives can also be shown aligned vertically, as shown in the next paragraph.
- Braces ({}) are used to group alternative operand values. One of the alternative values enclosed with the braces must be chosen. The alternatives may be shown vertically:

  $$\text{OPTCD=}\left\{\begin{matrix}\text{COND}\\\text{UNCOND}\\\text{LOCK}\end{matrix}\right\}$$

  or they can appear on one line:

  ```
  OPTCD= {COND|UNCOND|LOCK}
  ```

  Both expressions are equivalent. Note how the vertical bar is used to separate alternative values that appear on one line. When the grouping of alternatives on one line is unambiguous, the braces are usually omitted:

  ```
  OPTCD=COND|UNCOND|LOCK
  ```

- An underscored value means that if the operand is omitted, the macro will be expanded as though the underscored value has been coded. This alternative is called the assumed value, or default value. For example:

  OPTCD=<u>COND</u> | UNCOND | LOCK

  Here COND is the assumed value. If the OPTCD operand is omitted, OPTCD=COND is assumed by the assembler.

- Brackets ([ ]) denote optional operands. In the following example, the ERET operand is optional.

  AM=VTAM
  [ERET=error routine address]

- An ellipsis (...) indicates that whatever precedes it (either an operand value or an entire operand) can be repeated any number of times. An operand appearing as

  PROC=(processing option,...)

  could, for example, be coded as:

  PROC=(CONFTXT,DFASYX,RESPX)

- Parentheses, equal-signs, and uppercase characters must be coded exactly as shown in the operands column. Lowercase words represent values that the user must supply.

Comments and Continuation Lines: Comments may contain any characters valid in the assembler language. Comments can be continued on more than one card by placing an asterisk in column 1 as shown in the example below. In this publication, the comments field is not shown in the macro's assembler format table.

Operands can also be continued on additional cards as shown below. Note that if the operands are not extended to column 71, they must be separated after a comma. The continuation character in column 72 can be any nonblank character, but it cannot be a character of an operand. Comments must by separated from operands by at least one blank. Throughout the rest of this publication, the continuation characters are not shown.

```
LABEL1   OP1          OPERAND1,OPERAND2,OPERAND3,OPERX
                      AND4,OPERAND5     THIS IS ONE WAY

LABEL2   OP2          OPERAND1,OPERAND2,   AND THIS    X
                      OPERAND3,OPERAND4,   IS ANOTHER
*                                          WAY

column 1              column 16                column 72
```

Operand Descriptions

Following the assembler format table, each operand is named and described. Every operand description begins with an explanation of the operands function. If the operand has more than one fixed value that can be supplied with it, the operand description also explains the effect that each value has on the action performed by the macro instruction.

Operand Format: The operand description may include a description of the format in which the operand should be coded. This description is provided when the format is an exception to these general rules:

- When a *quantity* is indicated (for example, RECLEN=data length), you can specify the value with unframed decimal integers, an expression that is equated to such a value (for example, RECLEN=TEN, where, TEN EQU 5*2), or the number of the register (enclosed by parenthese) that will contain the value when the macro instruction is executed. The value cannot exceed 32,767. Registers 1-12 can be specified to designate an RPL (that is, to supply the address of an RPL to be modified). Register notation for all other operands is restricted to registers 2-12.

- When an *address* is indicated (for example, ACB=acb address) and the macro instruction is a declarative macro instruction (see Figure 1), you can specify any relocatable expression that is valid for an A-type address constant. If the macro instruction is an RPL-based or ACB-based macro instruction, you can use any expression that is valid for an RX-type assembler instruction (such as an LA instruction). Registers 1-12 can be specified for any operand that designates the address of an RPL. Register notation for all other operands is restricted to registers 2-12.

If any of the terms used in the format descriptions are unclear, refer to the *OS/VS and DOS/VS Assembler Language* publication.

The valid notation for the operands of the manipulative macro instructions (GENCB, MODCB, SHOWCB, and TESTCB) are not as straightforward. The rules of syntax for the manipulative macro instructions are defined and tabulated in Appendix E.

An example showing how the operand is coded or used may also be included in the operand description. Since there is an example elsewhere showing how the macro instruction as a whole might be coded, an operand example is provided only if the operand is unusually complex, or if its function can be better explained with an example.

Examples

Following the operand descriptions are one or more examples. These examples show possible ways that the macro and its operands might be coded.

The way a macro can be specified can often be understood more readily from an example than it can from the assembler format table, since the latter must show all possible ways to specify the macro. A macro that appears to be complex in the assembler format table usually appears far simpler when it is actually coded.

Return of Status Information

All of the macro instructions post return codes in registers and most indicate status information in various control block fields when they are executed. Descriptions of this status information, when applicable, can be found at the end of the macro instruction description. Here you will often find references to Appendixes C and D, where the status information is tabulated.

ACB–Create an Access Method Control Block

The ACB identifies the application program to ACF/VTAM and to the data communication network.

Each application program must be defined by the user before the program can use ACF/VTAM to communicate with terminals and logical units throughout the network. An application program is defined by coding an APPL statement for the program among the ACF/VTAM definition statements. The application program must then create an ACB that points to the same symbolic name of the program as the name specified by the APPL statement. When the ACB is opened, ACF/VTAM finds the APPL information for the program and associates that information (that is, associates the application program) with the ACB.

After the ACB has been opened, requests for connection and then requests for I/O operations can be made (all connection and I/O requests indicate an ACB). When the ACB is closed (with the CLOSE macro instruction), requests can no longer be made, and any connections that were established are broken.

After an ACB has been opened (and independent of any I/O operations), an application program can issue SENDCMD and RCVCMD macro instructions.

Using the ACB, the application program can provide an address of a list of exit routine addresses. The various routines represented in this list are invoked by ACF/VTAM when special events occur, such as error conditions, logon requests, and attention interruptions. The exit list pointed to in the ACB is created with the EXLST (or GENCB) macro instruction. Certain exit routines identified in an ACB exit list can be overridden by exit routines identified in an exit list specified in the NIB when connection is made with a particular terminal or logical unit (see the description of the EXLST operand below).

Using the ACB, the application program can also prevent or allow ACF/VTAM to queue logon requests that are directed to the ACB.

Each application program that uses ACF/VTAM must define and open an ACB. An application program can contain more than one ACB (thus breaking itself down into "subapplications"), but each ACB must indicate a different application program name (that is, identify a separate APPL definition statement). For example, the use of more than one ACB enables an application program to specify that one set of exit routines is to be used for all basic-mode terminals and another set be used for all record-mode logical units.

An ACB macro instruction causes an ACB to be built during program assembly. The control block is built on a fullword boundary. (The ACB can also be built during program execution with the GENCB macro instruction. See the GENCB macro for a description of this facility.) The ACB can be modified during program execution with the MODCB macro instruction, but only before it has been opened. The ACB cannot be modified while the ACB is open.

Name	*Operation*	*Operands*
[symbol]	ACB	AM=VTAM [,APPLID=address of application program's symbolic name] [,PASSWD=password address] [,EXLST=exit list address] [,MACRF={LOGON | NLOGON}]

ACB Fields Set by the Application Program

AM=VTAM

Identifies the ACB built by this macro instruction as an ACF/VTAM ACB. This operand is required.

APPLID=address of application program's symbolic name

Links the ACB during OPEN processing with a particular APPL entry in the resource definition table. This both identifies the application program to ACF/VTAM and associates the application program with any options that might be indicated in the APPL entry.

If you omit this operand, the APPLID field is set to 0. If this field is still set to 0 when OPEN is executed, the job step name specified on the program's EXEC statement (in OS/VS) or the job name (in DOS/VS) is used as the application program's symbolic name.

Format: Expressions involving registers cannot be used with the ACB macro instruction.

Note: *The area pointed to by this operand must begin with a 1-byte length indicator, followed by the application program's symbolic name in EBCDIC. This is the symbolic name that appears in an APPL statement and must conform to the rules for coding this operand described in the appropriae system programmer's guide. The length indicator specifies the length of the name. Any name that is longer than 8 bytes is truncated to 8. You can either pad the name to the right with enough blanks to form an 8-byte name (length indicator of 8), or you can set the length indicator to the actual length of the name you are providing and let ACF/VTAM do the padding. In the example at the end of this macro instruction description, the first method is used.*

PASSWD=password address

Allows an application program to associate its ACB with an APPL entry that is password protected. If a password is included in an APPL entry, any application program wanting to link its ACB to that entry must specify the entry's password in the ACB. The two passwords are compared when the application program opens the ACB. If the passwords do not match, the ACB is not opened. (The purpose of this password protection is to prevent a program from running as one of the installation's predefined application programs without the authorization of the installation.) If you omit this operand, the PASSWD field is set to 0.

Format: Expressions involving registers cannot be used with the ACB macro instruction.

Note: *The area pointed to by this operand must begin with a 1-byte length indicator, followed by the EBCDIC password (in alphanumeric characters only). This is the password that is specified using the PRTCT operand of the APPL statement. It must conform to the rules for coding this operand described in thee appropriate system* *programmer's guide. The maximum length is 8 bytes. The truncation and use of the length indicator are the same as described above for the APPLID operand.*

EXLST=exit list address

Links the ACB to an exit list containing addresses of routines to be entered when certain events occur. This list is created by an EXLST (or GENCB) macro instruction. See that macro for descriptions of these events.

More than one ACB can indicate the same exit list. While the use of an exit list is optional, any application program that is to participate as a secondary end of a session *must* specify a SCIP exit routine in the EXLST associated with the ACB. For more information, see the EXLST macro instruction. If no exit list is used, the application program is not notified that the events described in the EXLST macro instruction occurred.

The exit list identified in an ACB applies to all connections made by the application program. A separate exit list can be identified in the NIB used at connection to specify a DFASY, RESP, and/or SCIP exit routine to be used for that particular connection. With one exception, the DFASY, RESP, and SCIP exit routines identified in a NIB exit list have precedence over similar exit routines identified in an ACB exit list. This exception is in the processing of a Bind command, for which the ACB-specifies SCIP exit routine is always scheduled.

Format: Expressions involving registers cannot be used with the ACB macro instruction.

MACRF=<u>LOGON</u>|NLOGON

In a primary application program, this operand indicates whether or not the application program wants ACF/VTAM to queue logons for it. MACRF=LOGON allows ACF/VTAM to queue logons for the application program as they occur. When SETLOGON (OPTCD=START) is issued, the scheduling of the LOGON exit routine begins. SETLOGON (OPTCD=START) will not work unless MACRF=LOGON is specified for the ACB. MACRF=NLOGON indicates that no queuing of logons can occur. Until an application program opens an ACB that specifies MACRF=LOGON and issues SETLOGON with either the START or STOP, any logons that may have been directed at the application program are canceled. MACRF=NLOGON serves to notify all application programs issuing INQUIRE (OPTCD=APPSTAT) that logons cannot be directed at the ACB.

In a secondary application program, MACRF=LOGON must always be specified in the ACB. After SETLOGON=START is issued, it indicates that the application program is allowed to issue a request for connection (REQSESS) to a primary application and is also allowed to have its SCIP exit routine scheduled to receive the session parameters in a Bind command.

ACB Fields Set by ACF/VTAM

The following ACB fields are set by ACF/VTAM and can be examined by the application program during program execution. ACF/VTAM uses these fields to return information to the application program upon completion of OPEN or CLOSE processing.

Field Name	**Contents**
OFLAGS	Indicates whether or not the ACB has been opened successfully. By specifying OFLAGS=OPEN on a TESTCB macro instruction, you can determine whether the ACB has been opened.
ERROR	Indicates why the ACB has not been opened or closed successfully. You can use either SHOWCB or TESTCB to examine the codes in this field. The possible codes, along with their meanings, appear in the OPEN and CLOSE macro instruction descriptions.

See the description of the OPEN and CLOSE macros for more information on these fields.

Example

```
ACB1        ACB         AM=VTAM,APPLID=NAME,PASSWD=PASFLD,
                        MACRF=LOGON,EXLST=EXLST1
             .
             .
             .
NAME        DC          X'08'
            DC          CL8'PAYROLL'
PASFLD      DC          X'08'
            DC          CL8'SECRET'
```

ACB1 generates an ACB that will be associated with the PAYROLL APPL entry when the ACB is opened. SECRET is the password protecting that APPL entry. MACRF=LOGON means that once the application program has issued SETLOGON with OPTCD=START, logons are to be queued for processing by the application program. When logons are received, ACF/VTAM will note that ACB1 is the ACB providing access to the application program representing PAYROLL, and will invoke the LOGON exit routine indicated in EXLST1.

CHANGE—Change a Terminal's PROC Options or USERFLD Data (Basic Mode Only)

This macro instruction causes modifications to the PROC and USERFLD fields to become effective for a local 3270, BSC, or start-stop terminal. Since this means changing the ground rules under which all I/O requests for the terminal are processed, all pending I/O requests for the terminal are canceled when CHANGE iss executed.

When an OPNDST macro instruction is executed, the contents of these NIB fields are moved into internal ACF/VTAM control blocks. If the application program later wants to change the fields in effect for the terminal, altering the NIB to reflect these changes will not suffice since ACF/VTAM is referring to its internal control blocks, not to the NIB. Internal equivalents of the PROC and USERFLD fields must be changed as well. This latter function is provided by the CHANGE macro instruction.

The RPL pointed to in the CHANGE macro instruction must indicate (in its NIB field) the NIB whose PROC or USERFLD field is to be changed. The MODE field of the NIB to be changed must specify BASIC. The CID of the session with the terminal must be set in the NIB's CID field. RPL fields (but not the NIB fields) can be set with the CHANGE macro instruction itself.

To change the NIB fields, this procedure should be followed:

1. Modify the fields in the NIB with MODCB. For example:

```
MODCB        AM=VTAM,NIB=NIB4,USERFLD=NYC,
             PROC=(TRANS,CONFTXT,MONITOR)
```

2. Issue the CHANGE macro instruction to make these changes effective. CHANGE can simultaneously be used to make the RPL's NIB field point to the modified NIB, if it does not already do so:

```
CHANGE       RPL=RPL1,NIB=NIB4
```

Name	*Operation*	*Operands*
[symbol]	CHANGE	RPL=rpl address [, rpl field name=new value]...

RPL=rpl address

Indicates the RPL whose NIB field contains the address of the NIB that has been modified.

rpl field name=new value

Indicates an RPL field to be modified, and the new value that is to be contained within it. If you wish to avoid the possibility of program reassembly following future releases of ACF/VTAM, set the RPL field with MODCB macro instructions rather than with the CHANGE macro instruction.

Format: For *rpl field name,* code the keyword of the RPL macro instruction operand that corresponds to the RPL field being modified. The *new value* can be any value that is valid for that operand in the RPL macro instruction, or it can indicate a register.

The following RPL operands apply to a CHANGE macro instruction:

ACB=acb address

Indicates the ACB used when the terminal was connected.

NIB=nib address
Indicates the NIB whose CID field identifies the terminal whose PROC or USERFLD attributes are being changed.

Note: *After the CHANGE operation is completed, the NIB/ARG field in the RPL is unchanged and still contains the address of the NIB that was changed. If the RPL is used for subsequent I/O operations with the same terminal, the CID of the session must be placed in the RPL.*

ECB=ecb address
ECB=INTERNAL
EXIT=rpl exit routine address
Indicates the action to be taken by ACF/VTAM when an asynchronous (OPTCD=ASY) CHANGE macro instruction is completed. If EXIT is specified, the RPL exit routine is scheduled. Otherwise the ECB is posted, and CHECK or WAIT must be used to determine when the posting occurs.

If ECB=INTERNAL is specified and *synchronous* handling (SYN option) is used, ACF/VTAM uses the ECB-EXIT field in the RPL as an *internal* ECB and clears it. If *asynchronous* handling (ASY option) is used, ACF/VTAM will also use the ECB-EXIT field in the RPL as an internal ECB, but the user must issue a CHECK macro instruction to check and clear it. If neither the ECB nor EXIT keywords are specified, ACF/VTAM treats the field as if ECB=INTERNAL had been specified. See the RPL macro instruction for more information.

OPTCD=SYN|ASY
When the SYN option code is set, control is returned to the application program when the CHANGE operation has been completed. When ASY is set, control is returned as soon as ACF/VTAM has accepted the request. Once the operation is completed, the ECB is posted or the RPL exit routine is scheduled, as indicated by the ECB-EXIT field.

OPTCD=CS|CA
When CA is set, data obtained from the terminal can satisfy a READ (OPTCD=ANY or OPTCD=SPEC) macro instruction. When CS is set, only READ (OPTCD=SPEC) macro instructions can obtain data from the terminal.

Return of Status Information

After the CHANGE operation is completed, the following RPL fields are set:

The value 25 (decimal) is set in the REQ field, indicating a CHANGE request.

The RTNCD and FDBK2 fields are set as indicated in Appendix C.

Registers 0 and 15 are also set as indicated in Appendix C.

CHECK–Check Request Status

When asynchronous handling has been specified for a request (ASY option code in effect), the application program receives control when the request has been accepted by ACF/VTAM and the requested operation has been scheduled. A CHECK macro instruction must be issued for the RPL used for the request. (CHECK should not be issued for synchronous requests.)

When CHECK is executed for an RPL that specifies an internal or external ECB, the following actions occur:

- If the operation being checked has not been completed, execution of the application program is suspended until it is completed.
- If the operation being checked has been completd successfully, control is returned to the application program.
- If the operation being checked has been completed unsuccessfully, the LERAD or SYNAD exit routine is invoked, if available.
- The ECB (internal or external) is cleared before control is returned to the application program. (Clearing the ECB is necessary before the next or first RPL-based macro instruction using this RPL is issued.)

  Note: *The ECB specified in the RPL-based macro instruction must not be cleared between the time the RPL-based macro instruction is issued and the corresponding check is issued. If the ECB is cleared during this interval, control may not be returned to the application program after the CHECK is issued.*
- The RPL being checked is marked available for reuse by another request. (CHECK is the only way this can be done for asynchronous requests.)

When CHECK is executed in an RPL exit routine, the following actions occur:

- If the operation being checked was completed unsuccessfully, the LERAD or SYNAD exit routine is invoked, if available.
- The RPL being checked is marked available for reuse by another request.

Note: *When an RPL exit routine is used, the CHECK macro instruction should be issued only in the RPL exit routine. If the CHECK is issued outside of the exit routine and the CHECK is executed before the RPL exit routine is invoked, the CHECK will fail with a return code of X'18' in register 0.*

See the description of the CHECK macro instruction in the *ACF/VTAM Macro Language Guide* for more information.

Name	*Operation*	*Operands*
[symbol]	CHECK	RPL=rpl address

RPL=rpl address

Indicates the address of the RPL associated with the connection or I/O request whose completion status is being checked.

Format: Register notation (for registers 1-12) is valid.

Note: *See the ECB and EXIT operands in the RPL macro instruction description for more information about the RPL exit routine and the ECB.*

Example

```
CHK1          CHECK          RPL=RPL1
```

If CHK1 is in the routine indicated by RPL1's EXIT field, and the operation requested via RPL1 ends with a logical or other error, the LERAD or SYNAD exit routine is scheduled.

If there is no RPL exit routine for RPL1, CHK1 causes program execution to stop until the operation requested via RPL1 has ended. If the operation ends with a logical or other error, CHK1 causes the LERAD or SYNAD exit routine to be invoked.

Return of Status Information

When CHECK processing has been completed, registers 0 and 15 are set as indicated in Appendix C. If an error occurred and a LERAD or SYNAD exit routine was invoked, these registers contain the values set in them by the exit routine. Otherwise, ACF/VTAM places a general return code in register 15 and a recovery action return code in register 0 (see Figures C-4 and C-5 in Appendix C).

CLOSE–Close One or More ACBs

There are three significant results of executing the CLOSE macro instruction:

- ACF/VTAM no longer accepts any connection or I/O requests that refer to the ACB specified in the CLOSE macro. This ACB is effectively disconnected from ACF/VTAM.
- ACF/VTAM no longer maintains the association between the APPL entry in the resource definition table and the ACB specified in this macro instruction. CLSDST (PASS) logons that are directed towards the application program cannot cause the LOGON exit routine to be scheduled, but are queued awaiting the next OPEN. Insofar as terminals or logical units requesting logons are concerned, the portion of the application program represented by the ACB ceases to exist when CLOSE is executed.
- ACF/VTAM breaks every connection that exists between the ACB and other terminals and logical units. Before CLOSE breaks a connection, all I/O activity is stopped and all pending I/O requests are canceled.

The CLOSE macro instruction can be applied to more than one ACB. CLOSE must be issued in the main program or in the LERAD or SYNAD exit routine if the routine has been entered directly from the main program. Never issue CLOSE in the RPL exit routine or in any of the other EXLST exit routines, such as the TPEND exit routine.

In OS/VS, where the privileged user can manage multiple tasks in the same application program, all I/O requests must be completed before CLOSE can be issued in the main part of the mother task.

Name	*Operation*	*Operands*
[symbol]	CLOSE	acb address[, acb address]...
This form of CLOSE is valid in DOS/VS only.		
[symbol]	CLOSE	(acb address[,, acb address]...)
This form of CLOSE is valid in OS/VS only.		

acb address
Indicates the ACB that is to be disconnected from ACF/VTAM.

Format: If more than one ACB is specified, separate each with a comma if the program is going to be run under DOS/VS. Separate each ACB address with *two* commas if the program is going to be run under OS/VS. The parentheses for the OS/VS CLOSE can be omitted if only one address is coded.

Note: *One CLOSE macro instruction can be issued to close VSAM ACBs in addition to ACF/VTAM ACBs. DOS/VS users can also include DTFs with this macro instruction, and OS/VS users can also include DCBs.*

Example

```
CLOSE123     CLOSE      ACB1,ACB2,(7)         (DOS/VS)
CLOSE123     CLOSE      (ACB1,,ACB2,,(7))     (OS/VS)
```

CLOSE123 closes ACB1, ACB2, and the ACB whose address is in register 7. All terminals and logical units connected via these ACBs are disconnected.

Return of Status Information

When control is returned to the instruction following the CLOSE macro, register 15 indicates whether or not the CLOSE processing has been completed successfully. Successful completion (meaning that all ACBs specified in the macro instruction have been disconnected from ACF/VTAM) is indicated by a return code of 0 (for DOS/VS users, register 15 is left unmodified). Unsuccessful completion is indicated by the following register 15 values:

For DOS/VS	Meaning
nonzero	One or more ACBs (or DTFs or VSAM ACBs) were not successfully closed.

For OS/VS	Meaning
04	One or more ACBs were not successfully closed. Depending on the type of error, the OFLAGS field may indicate that the ACB is closed even though the CLOSE has failed (for example, the ACB may never have been opened).
08	One or more ACBs were not successfully closed. Inspect the ERROR field for the cause of the failure. Another CLOSE macro instruction may be used.
12	One or more ACBs were not successfully closed. Another CLOSE macro instruction may not be issued.

If unsuccessful completion is indicated, the application program can examine the OFLAGS field in each ACB to determine which ACB was not closed. If you use the OFLAGS=OPEN operand on a TESTCB macro instruction, an "equal" PSW condition code will result if the ACB was not closed.

For each ACB, you can use either the SHOWCB or TESTCB macro instruction to check the ERROR field and determine the cause of the error. For example:

```
SHOWCB        AM=VTAM,ACB=ACB1,FIELDS=ERROR,AREA=SHOWIT,
              LENGTH=4
```

ERROR field values are shown in Appendix C.

Note: *If the ACB address specified in the CLOSE macro instruction does not indicate an ACB or lies beyond the addressable range of your application program,* nothing *is posted in the ACB's ERROR field.*

CLSDST–Disconnect Terminals or Logical Units from the Application Program

The CLSDST (close destination) macro instruction requests ACF/VTAM to break or not make a connection between the application program and a specified terminal or logical unit. CLSDST cancels any pending I/O requests for the terminal or logical unit, and any unread data from it is lost. The CLSDST macro instruction can be issued only by an application program acting as the primary end of the session.

The terminal or logical unit to be disconnected is specified with either the ARG field or the NIB field of CLSDST's RPL:

- If the ARG field contains the CID of a session, that session is terminated.
- If the NIB field contains the address of a NIB, the terminal or logical unit whose symbolic name has been placed in that NIB's NAME field is disconnected.

(The RPL cannot contain both a CID and a pointer to a NIB, because the ARG and NIB fields occupy the same area in the RPL control block.)

Using a CID is easier following normal communications with the terminal or logical unit, since the CID is used by all of the I/O requests and thus should be readily available. Using a NIB address and symbolic name is necessary if you are issuing CLSDST for a terminal or logical unit that was never connected to your application program. For example, you must issue CLSDST in order to reject a logon request, and you can cancel a pending OPNDST (OPTCD=ACCEPT) macro instruction by issuing CLSDST. In both of these situations, only the symbolic name of the terminal or logical unit is available to you.

If, at the time CLSDST is executed, ACF/VTAM buffers hold data from the terminal or logical unit, the data is not saved for the next application program that becomes connected to the terminal or logical unit, but is discarded.

The CLSDST macro instruction can optionally be used to request that ACF/VTAM reconnect the terminal or logical unit to another application program (specified by you) in addition to disconnecting it. This option is implemented by setting the PASS option code in CLSDST's RPL. If this option is used (it must be authorized by the installation), ACF/VTAM first generates a logon for the terminal or logical unit and then disconnects it. Your application program must indicate which application program is to receive the logon. A logon mode name may be specified in the NIB (if none is specified, the default logon mode name for the terminal or logical unit is used). A logon message from a data area in your program can also be sent with the logon. (The data area containing the logon message can be reused as soon as CLSDST has been completed.) A terminal or logical unit cannot be passed to the same application program (ACB name) that issues the CLSDST macro instruction.

If a logon is going to be generated after the disconnection, the RPL's PASS option code must be set, and the RPL's AAREA field must point to the symbolic name of the receiving application program. This name must be placed in an 8-byte field, left justified, and padded to the right with blanks. If a logon message is also to be sent with the logon, the AREA and RECLEN fields must indicate the location and length of the message. If a message is not to be sent, the RECLEN field must be set to 0.

CLSDST (OPTCD=PASS) will fail if the receiving primary application program is not defined in the same domain as the secondary logical unit, has not been activated, has not yet opened its ACB, has opened its ACB with MACRF=NLOGON specified, or has issued SETLOGON (OPTCD=QUIESCE) to close its logon queue. However, CLSDST (OPTCD=PASS) will cause a logon to be queued if the receiving primary application program has issued SETLOGON (OPTCD=STOP), even though this indicates that the application program temporarily does not want any logons directed at it. For logons generated by CLSDST (OPTCD=PASS), an INQUIRE (OPTCD=APPSTAT) macro instruction normally should be issued before CLSDST (OPTCD=PASS) is issued. The return code from INQUIRE indicates the status of the receiving program.

If the RELEASE option code is used instead of the PASS option code, the terminal or device-type logical unit is simply disconnected as the application program is concerned. If another application program has requested connection to the terminal or device-type logical unit, or if the user has indicated (either in a definition statement or by means of a VARY LOGON command) that automatic logons are to be generated, ACF/VTAM reconnects the terminal or device-type logical unit to the appropriate application program.

If an application program has completed its processing and is ready to disconnect *all* of the terminals and logical units connected to it, a CLSDST macro instruction for each terminal or logical unit need not be used. The CLOSE macro instruction may be used; it disconnects all of the terminals and logical units connected via a given ACB (as though CLSDST with the RELEASE option had been issued for each one).

See the description of the CLSDST macro instructions in the *ACF/VTAM Macro Language Guide* for performance considerations.

Note: *When a CLSDST (OPTCD=PASS) is issued to pass a logical unit, the Unbind command sent by ACF/VTAM specifies (by the Unbind Hold indicator) that the logical unit should expect a Bind command and should not go into a mode which could not process that Bind. (An example of such a mode is the 3790 mode of offline operation called* local mode.*) To allow the logical unit to be released if the expected Bind cannot be sent, an OPNDST followed by a CLSDST (OPTCD=RELEASE) must be issued. This can be done (1) in the LOGON exit routine of the receiving application program if that application program does not wish to establish a connection with the logical unit, or (2) in the NSEXIT exit routine of the application program issuing the CLSDST PASS macro instruction. The NSEXIT is scheduled if a Bind command is not sent to the logical unit by the receiving application program.*

Name	*Operation*	*Operands*
[symbol]	**CLSDST**	**RPL=rpl address** **[,rpl field name=new value]** . . .

RPL=rpl address

Indicates the location of the RPL to be used during CLSDST processing. Either the ARG field of this RPL must contain a session's CID or the NIB field must be set to point to the NIB containing the symbolic name of the terminal.

rpl field name=new value

Indicates an RPL field to be modified and the new value that is to be contained within it. If you wish to avoid the possibility of program reassembly following future releases of ACF/VTAM, set the RPL field with MODCB macro instructions rather than with the CLSDST macro instruction.

Format: For *rpl field name*, code the keyword of the RPL macro instruction operand that corresponds to the RPL field being modified. ARG can also be coded. The *new value* can be any value that is valid for that operand in the RPL macro instruction, or it can indicate a register. The value supplied with the ARG keyword must indicate a register.

The following RPL operands apply to a CLSDST macro instruction:

ACB=acb address
Indicates the ACB from which the terminal or logical unit is to be disconnected.

NIB=nib address
If OPTCD=RELEASE is specified, it indicates the NIB whose NAME field identifies the terminal or logical unit to be disconnected. If OPTCD=PASS is specified, it indicates a NIB whose NAME field identifies the terminal or logical unit that is to be disconnected and reconnected to another application program and, optionally, whose LOGMODE field specifies the session parameters to be used for the reconnection. If the NIB field does not indicate a NIB address, the ARG field must contain the CID of the session.

ARG=(register)
Indicates the register that contains the CID of the session with the terminal or logical unit to be disconnected. This register notation must be used if the CID is to be placed into the ARG field with this CLSDST macro instruction. ARG and NIB provide two mutually exclusive methods of identifying the terminal or logical unit.

AREA=address of logon message
Indicates the location of the data to be sent to the application program receiving the terminal or logical unit. The content and format of the data is determined by the sending and receiving application programs. The logon message is equivalent to the data portion of an Initiate Self command or a character-coded logon. A logon message is sent only if OPTCD=PASS is set.

RECLEN=length of logon message
Indicates how many bytes of data are to be sent to the application program receiving the terminal or logical unit. No data is sent if RECLEN is set to 0.

AAREA=address of receiver's symbolic name
Indicates the name of the application program that is to be connected to the terminal or logical unit you are disconnecting. You can specify the application program that is to receive the terminal or logical unit only if OPTCD=PASS is set. The name must be 8 bytes long and padded to the right with blanks.

ECB=ecb address
ECB=<u>INTERNAL</u>
EXIT=rpl exit routine address
Indicates the action to be taken by ACF/VTAM when an asynchronous (OPTCD=ASY) CLSDST macro instruction is completed. The macro instruction is completed when I/O has been canceled and the terminal or logical unit has been disconnected; completion does not depend on the receiving application program's issuing OPNDST. If EXIT is specified, the RPL exit routine is scheduled. Otherwise the ECB is posted, and CHECK or WAIT must be used to determine when posting occurs.

If ECB=INTERNAL is specified and *synchronous* handling (SYN option) is used, ACF/VTAM uses the ECB-EXIT field in the RPL as an *internal* ECB and clears it. If *asynchronous* handling (ASY option) is used, ACF/VTAM will also use the ECB-EXIT field in the RPL as an internal ECB, but the user must issue a CHECK macro instruction to check and clear it. If neither the ECB nor EXIT keywords are specified, ACF/VTAM treats the field as if ECB=INTERNAL had been specified. See the RPL macro instruction for more information.

OPTCD=SYN|ASY

When SYN is set, control is returned to the application program when the CLSDST operation is completed. When ASY is set, control is returned as soon as ACF/VTAM has accepted the CLSDST request. Once the operation has been completed, the ECB is posted or the RPL exit routine is scheduled, as indicated by the ECB-EXIT field.

OPTCD=RELEASE|PASS

When RELEASE is set, ACF/VTAM determines the identity of the terminal's or device-type logical unit's next owner (if any). When PASS is set, a logon is directed at the application program whose symbolic name is indicated in the AAREA field of the RPL used by CLSDST. If the AREA and RECLEN fields are also set, a logon message is sent to the application program. The use of PASS must be authorized by the installation.

Examples

```
CL1          CLSDST    RPL=RPL1,
                       ACB=ACB1,
                       NIB=NIB3,                     (LOGICAL UNIT TO BE DISCONNECTED)
                       AAREA=APPLNAME,               (APPLICATION TO RECEIVE LOGON)
                       AREA=LGNMSG,RECLEN=60,        (LOGON MODE AND MESSAGE)
                       ECB=POSTIT1,OPTCD=(ASY,PASS)
                .
                .
                .
POSTIT1      DS        F
NIB3         NIB       NAME=LU1,LOGMODE=BATCH
APPLNAME     DC        CL8'PLOTTER'
LGNMSG       DC        CL60'LOGON FROM LU1'
```

CL1 disconnects the logical unit represented in NIB3 (LU1) and generates a logon for it; the logon is directed at the application program named PLOTTER. This macro instruction also specifies a logon mode (BATCH) and 60 bytes of information containing a logon message (LGNMSG) with the logon. The logon message and the session parameters that ACF/VTAM derives from the logon mode can be accessed (using INQUIRE) by the application program receiving the logon before it issues an OPNDST. If it is desired to send the actual logon mode name (BATCH, in this example) to the application program receiving the logon, the logon mode name can be specified as part of the original logon message; the NIB LOGMODE parameter would still be required.

```
CL2          CLSDST    RPL=RPL2,
                       ARG=(3),                      (TERMINAL TO BE DISCONNECTED)
                       ECB=POSTIT2,OPTCD=(ASY,RELEASE)
```

CL2 disconnects the terminal whose session CID has been placed in register 3. Unlike the first example above, CL2 does not generate a logon request for a specified application program, nor does it send a logon mode or a logon message.

```
CL3          CLSDST    RPL=RPL3,
                       NIB=NIB6,                     (LOGICAL UNIT TO BE DISCONNECTED)
                       AAREA=APPLNAME,               (APPLICATION TO RECEIVE LOGON REQUESTS)
                       RECLEN=0,                     (NO LOGON MODE OR MESSAGE)
                       ECB=POSTIT3,OPTCD=(ASY,PASS)
                .
                .
                .
APPLNAME     DC        CL8'PLOTTER'
POSTIT3      DC        F'0'
NIB6         NIB       NAME=LU3
```

CL3 disconnects the logical unit represented by NIB6 (LU3), and generates a logon for it that is directed at the PLOTTER application program. Since the RECLEN field is being set to 0, no logon message is sent to PLOTTER. The default logon mode of 8 blanks is assumed.

Return of Status Information

After the CLSDST operation is completed, the following RPL fields are set:

The value 31 (decimal) is set in the REQ field, indicating a CLSDST request.

The RTNCD and FDBK2 fields are set as indicated in Appendix C.

Registers 0 and 15 are also set as indicated in Appendix C.

DO–Initiate LDO-Specified I/O Operations (Basic Mode Only)

If an application program uses logical device orders (LDOs) to request I/O operations, it must use the DO macro instruction to initiate the operations. The special I/O operations initiated with DO are described in the LDO macro instruction.

The user of the DO macro instruction specifies an RPL whose AREA field contains the address of an LDO or list of LDOs, and whose ARG field contains the CID of the session with the BSC or start-stop terminal that is to be the object of the I/O operations. Changes to the RPL can be specified in the DO macro instruction itself.

When DO is completed, the AAREA field of the RPL indicates the address of the last LDO used by DO. If an error occurs, AAREA contains the address of the LDO that was being processed when the error occurred.

Name	*Operation*	*Operands*
[symbol]	DO	RPL=rpl address [, rpl field name=new value]...

RPL=rpl address
Indicates the location of the RPL whose AREA field contains the address of an LDO or list of LDOs to be used, and whose ARG field contains the CID of the session with the terminal that is to be the object of these LDOs.

rpl field name=new value
Indicates a field of the RPL to be modified and the new value that is to be contained within it. If you wish to avoid the possibility of program reassembly following future releases of ACF/VTAM, set the RPL field with MODCB macro instructions rather than with the DO macro instruction.

Format: For *rpl field name* code the keyword of the RPL macro instruction operand that corresponds with the RPL field to be modified. ARG can also be coded. The *new value* can be any value that could have been supplied with the keyword had the operand been issued in an RPL macro instruction, or it can indicate a register. The value supplied for the ARG keyword must indicate a register.

The following RPL operands apply to the DO macro instruction:

ACB=acb address
Indicates the ACB that was used when the terminal was connected.

ARG=(register)
Indicates the register containing the CID of the session with the terminal. This register notation must be used when the CID is placed into the ARG field with this DO macro instruction.

AREA=ldo address
Indicates the LDO or list of LDOs to be used by this macro instruction.

ECB=ecb address
ECB=INTERNAL
EXIT=rpl exit routine address
Indicates the action to be taken when an asynchronous (OPTCD=ASY) DO macro instruction is completed. The macro instruction is completed when the last LDO has been processed. If EXIT is specified, the RPL exit routine is scheduled. Otherwise the ECB is posted, and CHECK or WAIT must be used to determine when the posting occurs.

If ECB=INTERNAL is specified and *synchronous* handling (SYN option) is used, ACF/VTAM uses the ECB-EXIT field in the RPL as an *internal* ECB and clears it. If *asynchronous* handling (ASY option) is used, ACF/VTAM will also use the ECB-EXIT field in the RPL as an internal ECB, but the user must issue a CHECK macro instruction to check and clear it. If neither the ECB nor EXIT keywords are specified, ACF/VTAM treats the field as if ECB=INTERNAL had been specified. See the RPL macro instruction for more information.

OPTCD=SYN|ASY
When the SYN option code is set, control is returned to the application program when the DO operation has been completed. When ASY is set, control is returned as soon as ACF/VTAM has accepted the Once the DO operation has been completed, the ECB is posted or the RPL exit routine is scheduled, as indicated by the ECB-EXIT field.

OPTCD=CS|CA
When CA is set, data obtained from the terminal can satisfy a READ (OPTCD=ANY or OPTCD=SPEC) macro instruction. When CS is set, only READ (OPTCD=SPEC) macro instructions can obtain data from the terminal. See the RPL macro instruction for more information.

Example

```
DOLDO       DO          RPL=RPL1,
                        AREA=(2),ARG=(3),
                        EXIT=DONE,OPTCD=(SPEC,ASY)
```

DOLDO initiates whatever operations are indicated by the LDO (or list of LDOs) pointed to by register 2. In this example, register 3 must contain the CID of the session with the terminal to be involved in the LDO-specified I/O operation or operations. Since the ASY option code is specified, control is returned to the instruction following DOLDO before the operation is actually performed. Since EXIT is specified, the routine located at DONE will be scheduled when the DO macro instruction is completed.

Return of Status Information

Once DO processing is finished, the following RPL fields are set:

The address of the last LDO used by DO is placed in the AAREA field.

When a NIB is used by OPNDST, the user has the option of specifying an arbitrary value in the USERFLD field of that NIB. When the DO macro instruction is subsequently issued for the terminal associated with that NIB, whatever was placed in USERFLD by the user is placed in the USER field of the RPL by ACF/VTAM.

If DO is processing a READ or LDO or READBUF LDO, the RECLEN field is set to indicate the number of bytes of data obtained from the terminal.

The value 19 (decimal) is set in the REQ field, indicating a DO request.

If DO is processing a READ or WRITE LDO, the SENSE field is set as indicated in Appendix C.

If DO is processing a READ LDO, the FDBK field is set as indicated in Appendix C.

The RTNCD and FDBK2 fields are set as indicated in Appendix C.

Registers 0 and 15 are also set as indicated in Appendix C.

EXECRPL–Execute a Request

When a request fails for a temporary reason and the request might succeed if reissued, ACF/VTAM returns a recovery action return code of 8 in register 0 and in the RPL's RTNCD field. The portion of the application program receiving control (the SYNAD exit routine or the next sequential instrucion) has the address of the RPL available to it in register 1. The program can issue an EXECRPL macro instruction to retry the request without having to modify the request's RPL.

The operation performed by EXECRPL depends on the request code that is set in the RPL's REQ field. If the REQ field indicates a RECEIVE request, for example, the effect of EXECRPL is identical to that of a RECEIVE macro instruction. (The REQ field is described in the RPL macro instruction.) EXECRPL can be used to execute any RPL-based request except CHECK or another EXECRPL macro.

When EXECRPL is used for its intended purpose–that is, to reexecute a request *that has failed with a recovery action return code of 8*–the application program need not concern itself with the RPL contents when EXECRPL is issued. But if EXECRPL is used to retry a request that has failed with some other recovery action return code (or to repeat a request that has not failed at all), close attention must be paid to RPL fields that can be set by the application program and then modified by ACF/VTAM while the request is being processed.

For example: The RPL's RESPOND field for a SEND request is set by the application program (to indicate whether a response is to be returned) and is then reset by ACF/VTAM (to indicate the type of response returned). EXECRPL should not be issued for this RPL unless the RESPOND field is reset to its intended setting.

Figure 16 at the end of the RPL macro instruction description identifies those fields that can be set by the application program and then reset by ACF/VTAM. These fields are identified with an 'AV' under the appropriate macro instruction.

Name	*Operation*	*Operands*
[symbol]	**EXECRPL**	**RPL=rpl address** **[, rpl field name=new value]...**

RPL=rpl address
Indicates the location of the RPL defining the request to be reexecuted.

rpl field name=new value
Indicates a field of the RPL to be modified and the new value that is to be contained within it. If you wish to avoid the possibility of program reassembly following future releases of ACF/VTAM, set the RPL field with MODCB macro instructions rather than with the EXECRPL macro instruction.

Format: For *rpl field name*, code the keyword of the RPL macro instruction operand that corresponds with the RPL field to be modified. The *new value* can be any value that could have been supplied with the keyword had the operand been issued in an RPL macro instruction, or it can indicate a register.

Example

```
RETRY1      EXECRPL     RPL=(1)
```

A SYNAD exit routine has been entered for a retriable error (register 0 is set to 8). The request is reexecuted and defined by the current contents of the RPL.

Return of Status Information

Once the EXECRPL macro instruction is completed, the action taken by ACF/VTAM depends on the type of request that EXECRPL has processed. The manner in which the application program is notified of completion (ECB or EXIT), the RPL fields and return codes that are returned, and the data areas (if any) that are used depend on the contents of the RPL when EXECRPL was executed. If the request is successfully accepted or completed, then registers 0 and 15 at the next sequential instruction after EXECRPL are set exactly as expected when the original request was issued.

EXLST–Create an Exit List

The EXLST macro instruction builds a list of routine addresses during program assembly. Each operand in this macro instruction represents an event for which an exit routine is invoked by ACF/VTAM. The address supplied for each operand indicates the user-written routine to be given control when the event that it handles occurs. The SYNAD operand supplies the address of a routine that handles exception conditions (other than logical errors), the ATTN operand supplies the address of an attention-interruption handler, and so forth.

When you examine your program listing, you may discover that the assembler has reserved space for exit list addresses that you never specified. Unspecified exits will not, however, be used by ACF/VTAM, and you cannot use MODCB to insert an address in a field you never specified in the EXLST (or GENCB) macro instruction. An address of 0 can never be specified.

When the LERAD and SYNAD exit routines are invoked, register 1 contains the address of the failing request's RPL. When the other exit routines are invoked, register 1 contains the address of a parameter list. The contents of the parameter lists vary somewhat among exit routines. The parameter lists are summarized in Figure 3.

For all exit routines except LERAD and SYNAD, the last instruction must be a branch to the ACF/VTAM address that is in register 14 when the routine receives control. (For LERAD and SYNAD, this branch is required only if LERAD or SYNAD is invoked by a macro instruction issued within an RPL exit routine or other EXLST exit routine.) The exit routines are not provided with a save area for the general purpose registers. The application program may use and change registers as desired, but the register 14 address must be saved. The address of the exit list created by the EXLST macro instruction is placed in the EXLST field of an ACB by the application program (see the ACB macro instruction for details). More than one ACB can point to the same exit list. In this situation, however, the routines indicated in the exit list should be reenterable.

A few of the exit routines apply only to BSC and start-stop terminals or only to logical units. These are noted as "basic-mode only" or "record-mode only" respectively.

Note: *Only those exit routines that can be recognized by ACF/VTAM may be specified with the ACF/VTAM EXLST macro instruction. In addition, only ACF/VTAM requests are permitted in ACF/VTAM asynchronous exit routines. See the* ACF/VTAM Macro Language Guide *for more information about using these exit routines.*

Name	*Operation*	*Operands*	
[symbol]	EXLST	AM=VTAM [,LERAD= [,SYNAD= [,DFASY= [,RESP= [,SCIP= [,TPEND= [,RELREQ= [,LOGON= [, LOSTERM= [, ATTN= [, NSEXIT=	exit routine address]

Exit Routine	Register 1 Parameter List				
	1st Word	2nd Word	3rd Word	4th Word	5th Word
LERAD	None (Register 1 contains the RPL address for the request that failed)				
SYNAD	None (Register 1 contains the RPL address for the request that failed)				
DFASY	ACB address	CID	USERFLD data	Unused	Read-only RPL address
RESP	ACB address	CID	USERFLD data	Unused	Read-only RPL address
SCIP[1]	ACB address	CID	USERFLD data	Unused	Read-only RPL address
TPEND	ACB address	Reason-terminated code			
RELREQ	ACB address	Address of the terminal's symbolic name			
LOGON	ACB address	Address of the terminal's symbolic name	Unused	Length of logon message	
LOSTERM	ACB address	CID	USERFLD data	Reason-lost code	
ATTN	ACB address	CID	USERFLD data		
NSEXIT	ACB address	Contents depend on the type of network services request unit received.			Read-only RPL address

[1] If the SCIP exit routine is entered as a result of a Bind command, the 2nd and 3rd words are reserved, and the 4th word contains the address of the session parameters.

Figure 3. Parameter List for the EXLST Exit Routines

AM=VTAM

Identifies the exit list generated by this macro instruction as an ACF/VTAM exit list (as distinguished from a VSAM exit list). This operand is required.

LERAD=exit routine address

Indicates the address of a routine that will be entered when the application program makes a connection or I/O request that results in a *logical error.*

Before the LERAD exit routine is given control, ACF/VTAM sets a recovery action return code. These codes are explained in Appendix C.

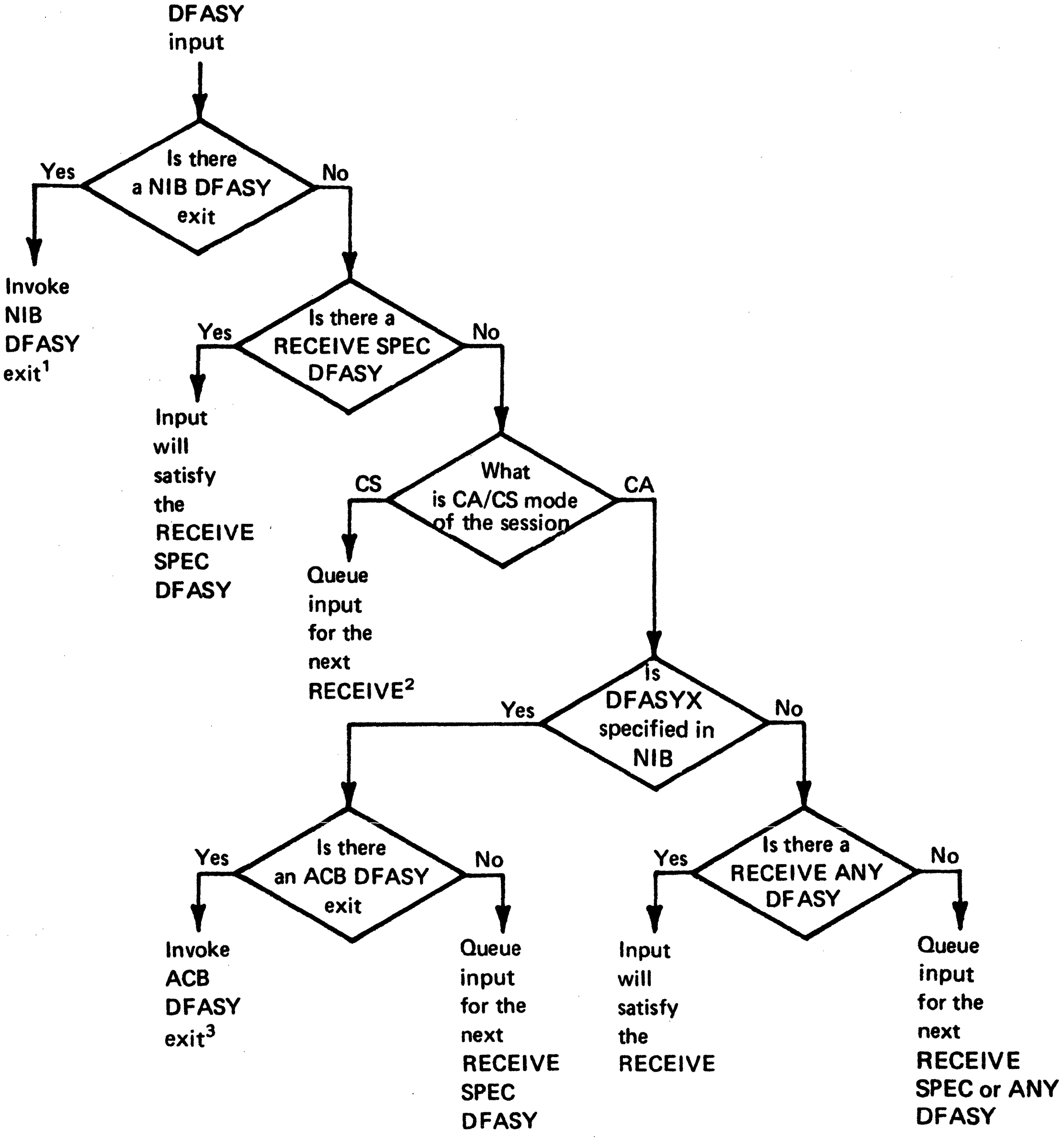
SYNAD=exit routine address

Indicates the address of a routine that is entered if an unrecoverable input or output error (physical error) or other unusual condition occurs during an I/O operation. (Errors that result from invalid requests are handled by the LERAD exit routine.) The SYNAD exit routine is entered for all recovery action return codes of 4, 8, 12, and 16 (decimal). Before the SYNAD exit routine is given control, ACF/VTAM sets a recovery action return code. These codes are explained in Appendix C.

DFASY=exit routine address (Record mode only)

The EXLST containing a DFASY exit routine address can be pointed to by a NIB, as well as by an ACB (see the EXLST operand of the NIB macro instruction).

The DFASY operand indicates the address to be entered when an expedited data flow control command is received. Commands received by the primary end of the session are SBI, QEC, RELQ, Signal, RSHUTD, and SHUTDC. Commands received by the secondary end of the session are SBI, QEC, RELQ, Signal, and SHUTD. ACF/VTAM handles the input in this manner:


DFASY input
Is there a NIB DFASY exit
Yes
No
Invoke NIB DFASY exit[1]
Is there a RECEIVE SPEC DFASY
Yes
No
Input will satisfy the RECEIVE SPEC DFASY
What is CA/CS mode of the session
CS
CA
Queue input for the next RECEIVE[2]
Is DFASYX specified in NIB
Yes
No
Is there an ACB DFASY exit
Yes
No
Invoke ACB DFASY exit[3]
Queue input for the next RECEIVE SPEC DFASY
Is there a RECEIVE ANY DFASY
Yes
No
Input will satisfy the RECEIVE
Queue input for the next RECEIVE SPEC or ANY DFASY

[1] The exit routine is scheduled if no other exit routine (including the NIB DFASY exit routine) is currently running; if there is an exit routine running, the input is queued for the NIB DFASY exit routine.

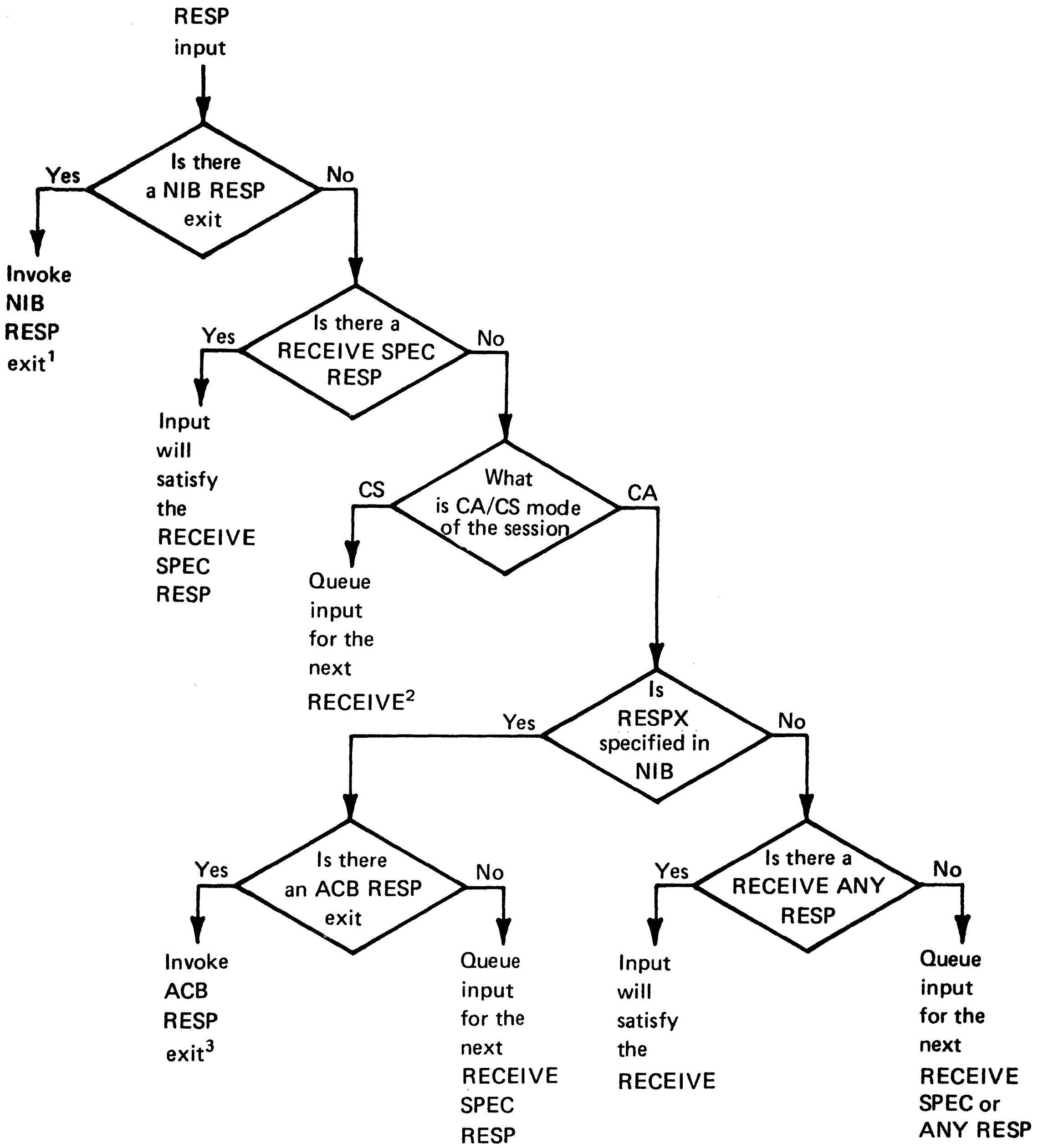
[2] The input will satisfy a RECEIVE SPEC DFASY. The input can also be obtained by a RECEIVE ANY DFASY if the receive mode has been switched to CA.

[3] The exit routine is scheduled if no other exit routine (including the ACB DFASY exit routine) is currently running; if there is an exit routine running, the input is queued for the ACB DFASY exit routine.

RESP=exit routine address (Record mode only)

The EXLST containing the RESP exit routine address can be pointed to by a NIB, as well as by an ACB (see the EXLST operand of the NIB macro instruction).

The RESP operand indicates the address of a routine to be entered when responses to requests arrive from a logical unit. ACF/VTAM handles the response in this manner:


RESP input
Is there a NIB RESP exit
Yes
No
Invoke NIB RESP exit[1]
Is there a RECEIVE SPEC RESP
Yes
No
Input will satisfy the RECEIVE SPEC RESP
What is CA/CS mode of the session
CS
CA
Queue input for the next RECEIVE[2]
Is RESPX specified in NIB
Yes
No
Is there an ACB RESP exit
Yes
No
Invoke ACB RESP exit[3]
Queue input for the next RECEIVE SPEC RESP
Is there a RECEIVE ANY RESP
Yes
No
Input will satisfy the RECEIVE
Queue input for the next RECEIVE SPEC or ANY RESP

[1] The exit routine is scheduled if no other exit routine (including the NIB RESP exit routine) is currently running; if there is an exit routine running, the input is queued for the NIB RESP exit routine.

[2] The input will satisfy a RECEIVE SPEC RESP. The input can also be obtained by RECEIVE ANY RESP if the receive mode has been switched to CA.

[3] The exit routine is scheduled if no other exit routine (including the NIB RESP exit routine) is currently running; if there is an exit routine running, the input is queued for the ACB RESP exit routine.

SCIP=exit routine address (Record mode only)

Indicates the address of a routine to be scheduled when a Bind, Unbind, Clear, Set and Test Sequence Numbers (STSN), Start Data Traffic (SDT), or Request Recovery (RQR) command is received by an application program. The Request Recovery (RQR) command can only be received by an application program acting as the primary end of the session. The other commands can only be received by an application program acting as the secondary end of a session.

The EXLST containing the SCIP exit routine address can be pointed to by a NIB, as well as an ACB (see the EXLST operand of the NIB macro instruction).

Note: *A Bind command does not cause a NIB-specified SCIP exit routine to be scheduled. Any application program that is to receive session parameters in a Bind command must therefore have a SCIP exit routine defined in the EXLST associated with the program's ACB.*

TPEND=exit routine address

Indicates the address of a routine to be entered when the network operator issues a HALT command, when ACF/VTAM detects an internal problem that necessitates halting itself, or when ACF/VTAM abnormally terminates.

Note: *CLOSE cannot be issued in an exit routine, but the TPEND routine could cause a CLOSE in the main program to be executed (by posting an ECB upon which the main program is waiting, for example).*

RELREQ=exit routine address

Indicates the address of a routine that is entered when another application program (or TOLTEP) requests connection to a terminal or device-type logical unit that is currently connected to your application program. This can occur when the other application program issues a SIMLOGON macro instruction (with the RELRQ and Q options specified) on behalf of your terminal or device-type logical unit.

LOGON=exit routine address

Indicates the address of a routine to be entered when ACF/VTAM has queued a pending logon for the application program.

LOSTERM=exit routine address

Indicates the address of a routine to be entered when contact with a terminal has been lost, when the logical unit has requested a logoff, when certain errors are detected in transmission, or when the terminal is temporarily unavailable.

ATTN=exit routine address (Basic mode only)

Indicates the address of a routine to be entered when a start-stop terminal connected to the application program causes an attention interruption and no read or write operation is pending or in progress for the the terminal.

NSEXIT=exit routine address (Record mode only)

Indicates the address of a routine to be entered when the application program receives a Network Services request unit.

GENCB–Generate a Control Block

The GENCB macro instruction builds an ACB, EXLST, RPL, or NIB. The advantage of using the GENCB macro instruction is that the control blocks are generated during program execution. (With the ACB, EXLST, RPL, and NIB macro instructions, the control blocks are built during program assembly.) If GENCB, MODCB, TESTCB, and SHOWCB are used to build and manipulate the control blocks, program reassembly should not be required should control block formats be changed during any future releases of ACF/VTAM.

GENCB not only builds the control block during program execution, bt can also build the control block in dynamically allocated storage. One advantage of this technique is that it can remove application program dependencies on the length of each control block.

The GENCB user specifies the type of control block to be built and the contents of its fields. The operands used to specify the field contents are exactly the same as those used in the macro instruction that builds the control block during assembly. For example, these macro instructions build the same exit list:

```
GENCB         BLK=EXLST,SYNAD=SYNADPGM,AM=VTAM
EXLST         SYNAD=SYNADPGM,AM=VTAM
```

The control block is built either in storage that ACF/VTAM obtains via the OS/VS GETMAIN or DOS/VS GETVIS facility, or in the application program's storage. To accomplish the latter, the application program should either reserve enough storage during program assembly to accomodate the control block, or perform its own GETMAIN or GETVIS operation to obtain the necessary storage. If the application program is providing the storage, the location and length of this storage must be coded in the GENCB macro instruction. Dynamic storage allocation for the control block occurs automatically if the location and length operands (WAREA and LENGTH) are omitted. The application program can issue FREEMAIN or FREEVIS macro instructions to free the storage obtained by GENCB. (If FREEMAIN is used, return the storage to subpool 0. If GENCB is issued in a task running in privileged state, return the storage to subpool 252.)

Dynamic storage allocation can be successful only if (1) the program is operating in virtual mode and (2) enough unallocated virtual storage remains in the program's partition or region to build the control block. See the description of the LENGTH operand for an explanation of how control block lengths are determined.

List, generate, and execute forms of the GENCB macro instruction are available; they are designated by the MF operand. These forms must be used in reenterant routines such as the LERAD and SYNAD exit routines (see the *ACF/VTAM Macro Language Guide.*

Because there is a large variety of formats in which the GENCB operands can be specified, format specifications have been tabulated in Appendix E and do not appear in this macro

Name	*Operation*	*Operands*
[symbol]	GENCB	BLK= { ACB | EXLST | RPL | NIB } ,AM=VTAM [, keyword=value] ... [, COPIES=quantity] [,WAREA=work area address, LENGTH=work area length] [, MF=list, generate, or execute form parameters]

BLK=ACB|EXLST|RPL|NIB

Indicates the type of control block to be generated.

AM=VTAM

Identifies this macro instruction as an ACF/VTAM macro instruction. This operand is required.

keyword=value

Indicates a control block field and the value that is to be contained or represented within it.

For *keyword*, code any keyword that can be used in the macro instruction corresponding to the BLK operand. If BLK=ACB is used, for example, code the keyword of any operand that can be used in the ACB macro instruction. One exception: ARG=(register) can also be coded if BLK=RPL.

For *value*, indicate a register or code any value that could be used if the operand were being specified in the ACB, EXLST, RPL, or NIB macro instruction, or use one of the formats indicated in Appendix E.

Note: *If no keywords are included, the following types of control blocks are built:*

ACB: All fields are set to 0, and the MACRF field is set to NLOGON.

RPL: All fields are set to their default values (as indicated in the RPL macro instruction description).

EXLST: All fields are set to 0.

NIB: All fields are set to their default values (as indicated in the NIB macro instruction description).

COPIES=quantity

Indicates the number of control blocks to be generated.

The copies are identical in form and content. With the exception of an exit list, they are placed contiguously in storage, whether that storage is the area indicated by the WAREA operand or is dynamically allocated storage.

The length returned in register 0 is the total length of the generated control blocks. The length of each block (the total length divided by the number of copies) can be used to determine the location of the beginning of each block.

Note: *If this operand is not used, one control block is built.*

WAREA=work area address

Indicates the location of the storage area in the application program where the control block is to be built. The work area must be aligned on a fullword boundary. If this operand is specified, the LENGTH operand must also be specified.

If the WAREA and LENGTH operands are omitted, ACF/VTAM obtains dynamically allocated storage via the GETMAIN or GETVIS facility and builds the control block there. Assuming that GENCB is completed successfully (this is indicated by a return code of 0 in register 15), the address of the generated control block (or blocks) is placed in register 1, and their total length is placed in register 0.

LENGTH=work area length

Indicates the length (in bytes) of the storage area designated by the WAREA operand.

If this length is insufficient, register 15 will contain the value 4, and register 0 will contain the value 9.

To avoid having to recode your application program should you wish to run it under a different operating system, use the manipulative macro instructions to obtain the control block lengths. You do this by specifying ACBLEN, EXLLEN, RPLLEN, or NIBLEN in either a SHOWCB or TESTCB macro instruction. For example, to obtain the length of an ACB in your particular operating system, the following SHOWCB could be coded:

```
SHOWCB        FIELDS=ACBLEN,AREA=WORKAREA,LENGTH=4,AM=VTAM
```

Or, to test the length of an exit list in your particular operating system, the following TESTCB could be coded:

```
TESTCB        EXLLEN=(7),AM=VTAM
```

If you are generating more than one control block, remember that the total length of *each* control block is the length indicated by the control block's length field (ACBLEN, EXLLEN, RPLLEN, NIBLEN) plus the number of bytes required for fullword alignment. (EXLSTs are variable in length; when no specific EXLST is specified, the length returned by SHOWCB or tested by TESTCB is the maximum possible length for your operating system.)

MF=list, generate, or execute form parameters

Indicates that a list, generate, or execute form of GENCB is to be used. Omitting this operand causes the standard form of GENCB to be used. See Appendix F for a description of the nonstandard forms of GENCB.

Examples

```
GEN1        GENCB       AM=VTAM,BLK=ACB,
                        APPLID=(3),EXLST=(6),
                        WAREA=BLOKPOOL,LENGTH=(4)
              .
              .
              .
BLOKPOOL    DS          32D
```

GEN1 builds an ACB in statically reserved storage (BLOKPOOL). When GEN1 is executed, register 3 must contain the address of an application program's symbolic name, and register 6 must contain the address of the exit list to be pointed to by the ACB.

```
            L           10,WORKAREA       (REG10=ACB LENGTH)
            GETMAIN     R,LV=(10)
            LR          5,1               (REG5=ACB ADDRESS)
GEN2        GENCB       AM=VTAM,BLK=ACB,
                        WAREA=(5),LENGTH=(10)
```

In this example, the application program is building an ACB in dynamically allocated storage obtained by itself. Using the procedure described above in the LENGTH operand description, the application program has obtained the length of an ACB and placed it in a fullword called WORKAREA. The instructions preceding GEN2 obtain the correct amount of storage, and GEN2 builds the ACB in that storage.

```
GEN3        GENCB       BLK=RPL,COPIES=10,AM=VTAM
```

GEN3 creates 10 RPLs in dynamically allocated storage obtained by VSAM (OS/VS) or ACF/VTAM (DOS/VS). The address of the beginning of these RPLs is returned in register 1, and the total length is returned in register 0. This length includes all padding for fullword alignment; the RPLLEN field indicates the length of each unpadded RPL. Each RPL is built as though an RPL macro instruction with no operands had been issued.

Return of Status Information

After GENCB processing is finished and control is returned to the application program, register 15 indicates whether or not the operation was completed successfully. If the operation was completed successfully, register 15 is set to 0; if it was completed unsuccessfully, register 15 is set to either 4, 8, or 12 (DOS/VS only). If it is set to 4 or 12, register 0 is also set indicating the specific nature of the error (see Appendix D).

INQUIRE–Obtain Terminal Information, Logical Unit Information or Application Progrum Status

There are ten types of INQUIRE. The setting of the RPL's option code determines which one is used. The following descriptions indicate the purpose and use of these options; see the operand descriptions for details regarding how each is specified. For restrictions on the use of the operands, see Figure 4.

LOGONMSG: INQUIRE obtains the data portion of a logon from a terminal or logical unit that logged on to the application program.

Note: *The data portion of a logon can only be obtained using INQUIRE prior to issuing OPNDST and as long as CLSDST has not been issued.*

DEVCHAR: INQUIRE obtains the device characteristics of a terminal, as they are defined by the user in the resource definition table. These device characteristics can be used to define which processing options the program wants to be in effect for the NIB used to connect that terminal. For a logical unit, the only indication that is returned is that of logical unit; the specific type of logical unit is not identified. This type of INQUIRE is also appropriate for use in LOGON exit routines where the program is establishing connection with terminals whose identities are not known during program assembly.

TERMS: For a given PU, LU, TERMINAL, LINE, or CLUSTER entry in the resource definition table, INQUIRE builds a NIB or list of NIBs in the application program.

The purpose of this type of INQUIRE is this: During ACF/VTAM definition, the user can define a PU, LU, TERMINAL, LINE, or CLUSTER entry and associate a set of terminals and device-type logical units with that entry. If the application program builds one NIB that indicates this entry in its NAME field, it can then issue INQUIRE to generate NIBs for *all* of the terminals and device-type logical units associated with the entry. Thus, the application program need not be aware of the identities or the number of these terminals and device-type logical units before establishing connection with them. This allows the user, via the network operator or ACF/VTAM definition procedures, to vary the set of terminals and device-type logical units after the application program has been assembled.

COUNTS: For the ACB specified, INQUIRE provides the number of active sessions for the application program (both primary and secondary) and the number of queued logons (for primary end of session requests) and pending Bind commands (for secondary end of session requests) that are waiting to be processed.

APPSTAT: INQUIRE checks a specified application program and determines whether the application program is accepting logons, never accepts logons, is temporarily not accepting logons, no longer accepts logons, or has not yet opened its ACB. A code representing each situation is returned in the RPL's FDBK field.

CIDXLATE: Given a session CID, INQUIRE provides the symbolic name of that terminal or logical unit. Conversely, given the symbolic name of a terminal or logical unit at the other end of the session, INQUIRE provides the corresponding CID of that session.

SESSKEY: INQUIRE provides the cryptographic session key and the initial chaining value.

When a terminal or logical unit is connected to an application program, its symbolic name is converted into a 32-bit value called the CID. This CID must subsequently be used for all I/O requests for the terminal or logical unit.

TOPLOGON: When a terminal or logical unit directs a logon at an application program (ACB) or when a logon is made on its behalf, the application program may or may not immediately accept or reject the terminal or logical unit. Until the logon is accepted or rejected, it is said to be *queued* to the ACB. More than one can be queued to the ACB. The TOPLOGON option supplies the symbolic name of the terminal or logical unit that is currently at the head of the logon queue for a given ACB.

BSCID: This version of INQUIRE is used when a BSC terminal with an ID verification feature dials in and causes a logon to be generated for the application program. If the application program determines that the terminal's name is one that was associated with an IDLST having NOMATCH=PASS in effect (see your system programmer), INQUIRE with OPTCD=BSCID supplies the terminal's ID verification sequence.

SESSPARM: Depending upon the parameters specified for the LOGMODE operand of the NIB, INQUIRE obtains the session parameters that are associated with a pending logon from a logical unit or obtains the session parameters associated with an entry in the logon mode table defined for the logical unit named in the NIB.

To determine whether a particular option code is applicable to a particular domain or session protocol, see Figure 4.

Name	*Operation*	*Operands*
[symbol]	**INQUIRE**	**RPL=rpl address** **[, rpl field name=new value]...**

RPL=rpl address
Indicates the location of the RPL that indicates which kind of processing INQUIRE is to perform.

rpl field name=new value
Indicates an RPL field to be modified and the new value that is to be contained or represented within it. If you wish to avoid the possibility of program reassembly following future releases of ACF/VTAM, set the RPL field with MODCB macro instructions rather than with the INQUIRE macro instruction.

Format: For *rpl field name,* code the keyword of the RPL macro instruction operand that corresponds to the RPL field being modified. The *new value* can be any value that is valid for that operand in the RPL macro instruction, or it can indicate a register. ARG=(register) can also be specified.

The following RPL operands apply to the INQUIRE macro instruction:

ACB=acb address
Indicates the ACB that identifies the application program.

ARG=(register)
Indicates the register containing the CID of the session with the terminal or logical unit. Register notation must be used if the CID is to be placed in the ARG field with this INQUIRE macro instruction. This operand applies to the DEVCHAR, CIDXLATE, and SESSKEY forms of INQUIRE.

OPTCD= keyword	Same-Domain Request	Cross-Domain Request	Issued by Primary	Issued by Secondary
LOGONMSG[1]	Yes	Yes	Yes	No[2]
DEVCHAR	Yes	Yes[1]	Yes	Yes
TERMS	Yes	Yes[1]	Yes	Yes
COUNTS	Yes	Yes	Yes	Yes
APPSTAT	Yes	Yes	Yes	Yes
CIDXLATE	Yes	Yes	Yes	Yes
TOPLOGON	Yes	Yes	Yes	No[2]
BSCID	Applies to BSC and TWX terminals only			
SESSPARM	Yes	Yes[1]	Yes	No
SESSKEY[3]	Yes	Yes	Yes	Yes

[1] May be issued only after the LOGON has been queued and before the OPNDST or CLSDST macro instruction is issued to accept or reject the pending logon.

[2] May be issued, but ACF/VTAM may return RTNCD=0, FDBK2=7 indicating that no information is available.

[3] May be issued only after the session has been established. If the session has not yet been established, ACF/VTAM returns RTNCD=0, FDBK2=7 indicating the requested information is not available.

Figure 4. Permissible Option Codes in the INQUIRE Macro Instruction

NIB=nib address

Indicates the NIB whose NAME field identifies the terminal, device-type logical unit or application program. This operand applies to the LOGONMSG, DEVCHAR, TERMS, APPSTAT. BSCID. SESSPARM, and CIDXLATE forms of INQUIRE. For DEVCHAR and CIDXLATE, NIB=address and ARG=(register) are mutually exclusive methods of identifying the terminal. For the SESSKEY form of INQUIRE, NIB=nib address is invalid.

AREA=address of data area

Indicates where the information produced by INQUIRE is to be placed.

AREALEN=length of data area

Indicates the maximum number of bytes of data that the data area can hold; if the data to be placed there exceeds this value, a special condition results (RTNCD=0, FDBK2=5) and the RECLEN field indicates the required length. The INQUIRE can be reissued using the correct length.

ECB=ecb address
ECB=INTERNAL
EXIT=rpl exit routine address

Indicates the action to be taken by ACF/VTAM when an asynchronous (OPTCD=ASY) INQUIRE macro instruction is completed. The macro instruction is completed when the information has been placed in the application program's storage area. If EXIT is specified, the RPL exit routine is scheduled. Otherwise the ECB is posted, and CHECK or WAIT must be used to determine when the posting occurs.

If ECB=INTERNAL is specified and *synchronous* handling (SYN option) is used, ACF/VTAM uses the ECB-EXIT field of the RPL as an *internal* ECB and clears it. If *asynchronous* handling (ASY option) is used, ACF/VTAM will also use the ECB-EXIT field in the RPL as an internal ECB, but the user must issue a CHECK macro instruction to check and clear it. If neither the ECB nor EXIT keywords are specified, ACF/VTAM treats the field as if ECB=INTERNAL had been specified. See the RPL macro instruction for more information.

OPTCD=SYN | ASY
When the SYN option code is set, control is returned to the application program when the INQUIRE macro instruction has been completed. When ASY is set, control is returned as soon as ACF/VTAM has accepted the request. Once the INQUIRE operation has been completed, the ECB is posted or the RPL exit routine is scheduled, depending on the setting of the ECB-EXIT field.

OPTCD=LOGONMSG | DEVCHAR | COUNTS | TERMS | APPSTAT | CIDXLATE | TOPLOGON | BSCID | SESSPARM

See Figure 4 for possible restriction on the use of the GPTCD operand.

LOGONMSG
INQUIRE obtains a logon message from a terminal or logical unit that has requested logon for the application program.

The RPL's ACB field must indicate the ACB to which the logon is directed. The NIB field must point to a NIB whose NAME field contains the symbolic name of the terminal or logical unit issuing the logon. The AREA and AREALEN fields must indicate the location and length of the storage area where the logon message is to be placed.

Note: *The information required for the ACB, NAME, and AREALEN fields is passed to the LOGON exit routine in a parameter list.*

ACF/VTAM indicates the length of the logon message in the RPL's RECLEN field. If the message is too long to fit, RECLEN is posted with the required length. Conditional completion is indicated (RTNCD=0 and FDBK2=5), and no data is supplied to the application program.

Note: *The data portion of a logon cannot be obtained after an OPNDST or CLSDST has been issued.*

DEVCHAR
INQUIRE obtains the device characteristics of a terminal or logical unit, as they are defined by the user in the resource definition table.

The RPL must indicate the terminal or logical unit in one of two ways: either the RPL's NIB field must indicate a NIB containing the symbolic name of the session, or the RPL's ARG field must contain the CID of the session with the terminal or logical unit at the other end of the session.

The device characteristics are placed in an 8-byte program storage area whose location is set in the AREA field. The AREALEN field must be set to 8. The bits that are set in this area indicate whether the device is an input, output, or input/output device. The specific device type (for example, 2741 communications terminal) is also indicated, along with additional information. See the description of the ISTDVCHR DSECT in Appendix H for a complete description of the DEVCHAR information.

TERMS
For a given PU, LU, TERMINAL, LINE, CLUSTER, or entry in the resource definition table, INQUIRE builds a NIB or list of NIBs in the application program.

The RPL's NIB field must point to a NIB whose NAME field contains the name of an entry that exists in the resource definition table at the time INQUIRE is executed. A NIB is built for each terminal represented in the entry.

The AREA and AREALEN fields designate the location and length of the work area where the NIBs are built. The work area must be set to binary zeroes by the application program before INQUIRE is issued.

ACF/VTAM indicates the total length of the NIBs in the RPL's RECLEN field.

If the application program wants the NIBs to be built in dynamically allocated storage (obtained by the application program), INQUIRE should be issued twice. For the first INQUIRE, set AREALEN to 0. This INQUIRE will be completed with RTNCD=0 and FDBK2=5 (insufficient length) and RECLEN will indicate the required length. Obtain the storage and issue INQUIRE with AREALEN set to the proper length.

Each NIB contains the symbolic name of the terminal or logical unit, with flags for the LISTEND field set in such a way as to group the NIBs together into a NIB list. In addition, device characteristics are placed in each NIB. These characteristics can be used to reset the PROC options of the NIB to values that are appropriate for the terminal or logical unit.

After the user has set each NIB's MODE field to BASIC or RECORD and other NIB fields to their desired values, the NIBs are ready to be used for connection.

COUNTS

For the ACB specified in the RPL, INQUIRE provides the number of active sessions for the application program (both primary and secondary) and the number of queued logons (for a primary end of session requests) and pending Bind commands (for secondary ends of session requests) that are waiting to be processed.

The RPL's ACB field must contain the address of the ACB. The AREA and AREALEN fields must indicate a 4-byte area where the information is to be placed. ACF/VTAM places the number of connected terminals or logical units in the first 2 bytes and the number of logons and Bind commands in the second 2 bytes.

APPSTAT

INQUIRE checks a given application program and returns a value in the RPL's FDBK field (refer to Appendix C).

The RPL's ACB field must contain the address of an opened ACB.

The RPL's NIB field must point to a NIB whose NAME field contains the symbolic name of the application program. Although the NIB is generally used as a *terminal* control block, note that here it is being used to identify an *application program.* The symbolic name in the 8-byte NAME field must be left-justified and padded to the right with blanks.

CIDXLATE

Given a session CID, INQUIRE provides the symbolic name of that terminal or logical unit. Conversely, given the symbolic name of a connected terminal or logical unit, INQUIRE provides the corresponding CID of the session with that terminal or logical unit. CIDXLATE is valid only for terminals or logical units that are in session, and an error cord is returned if no session exists.

To convert that CID back into its equivalent symbolic name, the RPL's ARG field must contain the CID when the INQUIRE macro instruction is executed. The symbolic name is returned in the data area that you indicate in the RPL's AREA field. The AREALEN field must be set to 8.

To use INQUIRE to convert the symbolic name into a CID, the RPL's NIB field must contain the address of a NIB and the named terminal must be currently connected. The NAME field of that NIB must in turn contain the symbolic name to be converted. The CID is placed in the data area that you indicate in the RPL's AREA field. The AREALEN field must be set to 4. If the terminal is not currently connected, a CID is not returned, and an error code is set.

Note: *The NIB and the ARG field occupy the same physical field in the RPL. If the last macro instruction operand used to set or modify this field was ARG=(register), or if the field has been left unchanged since ACF/VTAM inserted a CID into it, ACF/VTAM recognizes that this field contains a CID. If the last operand used to set or modify this field was NIB=*address,*ACF/VTAM recognizes that the field contains a NIB address.*

TOPLOGON
INQUIRE returns the symbolic name of the terminal or logical unit that has directed a logon at the application program and has spent the greatest amount of time waiting to be connected. If no logons are queued, an error return code results (see Appendix C).

The ACB field of INQUIRE's RPL must indicate the ACB whose logon queue is to be examined. The symbolic name is returned in the data area indicated by you in the RPL's AREA field. The AREALEN field must be set to 8.

BSCID
INQUIRE returns the BSC terminal's ID verification sequence. The RPL's NIB field must point to a NIB whose NAME field contains the symbolic name of the terminal (as provided in the LOGON exit routine's parameter list). The sequence, which can be up to 20 bytes long, is placed in the storage area pointed to by the AREA field. Set the AREALEN field to 20.

SESSPARM
INQUIRE returns the session parameters associated with a specified logon mode name or obtains the session parameters from a pending logon. The NIB field of the RPL must point to a NIB whose LOGMODE operand identifies the logon mode name to be used. The logon mode name that is specified in the NIB is used to search the logon mode table defined for the logical unit named in the NIB. If a match is found, the session parameters associated with the logon mode name are returned in the AREA field of the RPL. The logon mode name may be explicitly stated in the NIB, or the NIB may indicate that the session parameters (including logon data) specified in a pending logon are to be returned. See the description of the LOGMODE operand of the NIB macro instruction for more information. For more information on specifying session parameters, refer to Appendix J.

SESSKEY (Encrypt/Decrypt Feature only)
INQUIRE returns a 16 byte field containing the cryptographic session key (the first 8 bytes) and the Initial Chaining Value (ICV) (the second 8 bytes). The AREA field indicates the location of this 16 byte field. The AREALEN field must be set to 16 (decimal).

Examples

```
INQ1          INQUIRE     RPL=RPL1,OPTCD=APPSTAT,NIB=NIB1
TST1          TESTCB      RPL=RPL1,FDBK=0
              BE          ACTIVE
              .
              .
              .
NIB1          NIB         NAME=PGM1
```

INQ1 determines whether PGM1 is active and accepting logons. The answer is returned in RPL1's FDBK field. TST1 and the branch instruction cause a branch to ACTIVE if the application program is active and accepting logons.

```
INQ2          INQUIRE     RPL=RPL2,OPTCD=LOGONMSG,
                          ACB=ACB1,NIB=NIB2,
                          AREA=LGNMSG,AREALEN=100
 .
 .
 .
NIB2          NIB         NAME=LU2
LGNMSG        DS          CL100
```

INQ2 obtains the data portion of the logon that was sent from te logical unit whose symbolic name is contained in NIB2 and that was directd to the application program represented by ACB1. This data is placed in the area designated as LGNMSG.

Return of Status Information

When the INQUIRE operation is completed, the following RPL fields are set:

If INQUIRE (OPTCD=APPSTAT) has been completed normally, as indicated in register 15, the FDBK field is set as shown in Appendix C.

If INQUIRE (all versions except OPTCD=APPSTAT) has been completed normally, the RECLEN field indicates the number of bytes of data that have been placed in the work area designated by the AREA field. If INQUIRE was completed successfully but the FDBK2 field indicates that the work area was too small (FDBK2=5), RECLEN indicates the required length.

The value 26 (decimal) is set in the REQ field indicating an INQUIRE request.

The RTNCD and FDBK2 fields are set as indicated in Appendix C.

Registers 0 and 15 are also set as indicated in Appendix C.

INTRPRET–Interpret an Input Sequence

For each terminal or device-type logical unit, INTRPRET allows an application program acting as the primary end of the session to use interpret tables that are specified by the user and maintained by ACF/VTAM, rather than tables that are created and maintained by each application program.

During ACF/VTAM definition, the user identifies each terminal or device-type logical unit in its network and optionally associates an *interpret table* with each one. The interpret table contains one or more variable-length sequences that the terminal is capable of sending–such as graphic characters, tab characters, or program function key characters. With each of these sequences, the user specifies a corresponding 8-byte sequence (or the address of a user-written routine that generates an 8-byte sequence). An application program issuing INTRPRET identifies the terminal or logical unit and provides a particular sequence received from it; ACF/VTAM, if it finds that sequence in the interpret table for that terminal or logical unit, returns the corresponding sequence to the application program. An interpret table cannot be defined for other application programs, nor can such a table be used to interpret data from a terminal or device-type logical unit in another domain.

As an example, assume that the user defines the following interpret tables for two terminals, T2741 and T3270:

T2741's interpret table		*T3270's interpret table*	
_Logon.	LOGON	LGN	LOGON
Repeat last xmission.	REPEATLT	#	REPEATLT
Stop.	STOP	@	LIST

If an application program receives the sequence "Repeat last xmission." from T2741, INTRPRET (if provided with the sequence and the identity of the terminal) would return the sequence "REPEATLT" to the application program. If the application program specifies T3270 and provides the sequence "#" to INTRPRET, INTRPRET would return the corresponding sequence–in this case, another "REPEATLT"–to the application program.

Name	*Operation*	*Operands*
[symbol]	**INTRPRET**	**RPL=rpl address** **[, rpl field name=new value]...**

RPL=rpl address
Indicates the location of the RPL from which INTRPRET obtains needed information from the application program, and into which it returns completion status information.

rpl field name=new value
Indicates an RPL field to be modified and the new value that is to be contained or represented within it. To avoid the possibility of program reassembly following future releases of ACF/VTAM, set the RPL field with MODCB macro instructions rather than with the INTRPRET macro instruction.

Format: For *rpl field name* code the keyword of the RPL macro instruction operand that corresponds to the RPL field being modified. The *new value* can be any value that is valid for that operand in the RPL macro instruction or it can indicate a register. ARG=(*register*) can also be coded.

The following RPL operands apply to an INTRPRET macro instruction:

ACB=acb address
Indicates the ACB that identifies the application program.

ARG=(register)
Indicates the register containing the CID of the session. ACF/VTAM looks for an interpret table for this terminal or device-type logical unit.

NIB=nib address
Indicates the NIB whose NAME field identifies the terminal or device-type logical unit. ACF/VTAM looks for an interpret table for this terminal or device-type logical unit. If the NIB field does not indicate a NIB address, the ARG field must contain a CID.

AREA=data address
Indicates the data area containing the sequence being submitted to ACF/VTAM for interpretation.

RECLEN=data length
Indicates how many bytes are being submitted to ACF/VTAM for interpretation.

AAREA=data area address
Indicates the data area where ACF/VTAM is to place the interpreted sequence.

AAREALN=data area length
Indicates the capacity of the data area where ACF/VTAM is to place the interpreted sequence. This value should be at least 8.

ECB=ecb address
ECB=<u>INTERNAL</u>
EXIT=rpl exit routine address
Indicates the action to be taken by ACF/VTAM when an asynchronous (OPTCD=ASY) INTRPRET macro instruction is completed. If EXIT is specified, the RPL exit routine is scheduled. Otherwise the ECB is posted, and CHECK or WAIT must be used to determine when the posting occurs.

If ECB=INTERNAL is specified and *synchronous* handling (SYN option) is used, ACF/VTAM uses the ECB-EXIT field in the RPL as an *internal* ECB and clears it. If *asynchronous* handling (ASY option) is used, ACF/VTAM will also use the ECB-EXIT field in the RPL as an internal ECB, but the user must issue a CHECK macro instruction to check and clear it. If neither the ECB nor the EXIT keywords are specified, ACF/VTAM treats the field as if ECB=INTERNAL had been specified. See the RPL macro instruction for more information.

OPTCD=SYN | ASY
When the SYN option code is set, control is returned to the application program when the INTRPRET macro instruction has been completed. The macro instruction is completed as soon as the data has been placed in the application program's storage area. When ASY is set, control is returned as soon as ACF/VTAM has accepted the request. Once the INTRPRET macro instruction has been completed, the ECB is posted or the RPL exit routine is scheduled, depending on the setting of the ECB-EXIT field.

Example

```
INT1        INTRPRET   RPL=RPL1,
                       NIB=NIB6,AREA=INSEQ,RECLEN=(3),
                       AAREA=OUTSEQ,AAREALN=8
                .
                .
                .
RPL1        RPL
INSEQ       DS         CL180
NIB6        NIB        NAME=TERM1
OUTSEQ      DS         CL8
```

An application program has read a block of data from TERM1 and issues INT1 to interpret that data. NIB6 identifies the terminal, (and therefore, the interpret table to be used), AREA indicates the data area containing the data to be interpreted (INSEQ), and RECLEN indicates the amount of data to be interpreted. Note that if INTRPRET uses the same RPL that was used to read the data, the NIB-ARG field, the AREA field, and the RECLEN field are already correctly set.

Upon completion of INT1, the corresponding sequence is placed in the data area identified by the AAREA field (OUTSEQ). Although two separate data areas have been provided in this example for the "input" data (INSEQ) and the "output" data (OUTSEQ), there is no reason why the same data area could not be used.

Return of Status Information

When the INTRPRET operation is completed, these RPL fields are set:

If the FDBK2 field indicates that INTRPRET failed because the data to be placed in the AAREA work area would not fit (FDBK2=5), the RECLEN field contains the number of bytes required to hold the data. If INTRPRET was completed successfully, the RECLEN field indicates how many bytes of data have actually been placed in the AAREA work area.

The value 27 (decimal) is set in the REQ field, indicating an INTRPRET request.

The RTNCD and FDBK2 fields are set as indicated in Appendix C.

Registers 0 and 15 are also set as indicated in Appendix C.

LDO–Create a Logical Device Order (Basic Mode Only)

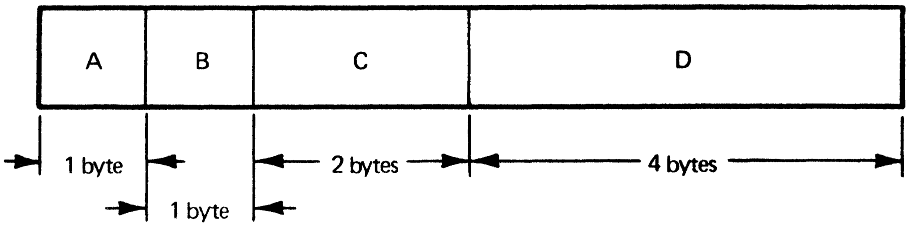
With the READ, WRITE, SOLICIT, and RESET macro instructions, the application program can perform all but a few of the I/O operations provided by ACF/VTAM. To request any of the following I/O operations, however, the application program must use the DO and LDO macro instructions:

- Copy the contents of a remotely attached 3277 Display Station buffer to the buffer of any printer or display unit attached via the same control unit. Use the COPYLBM or COPYLBT LDOs.
- Read the entire contents of a 3270 display unit's buffer. (To simply read the data that the terminal operator sends, use the READ macro instruction.) Use the READBUF LDO.
- Send a positive or negative acknowledgment accompanied by leading graphic characters, to a System/3 or System/370 CPU, and then read a block of data from it. Use the WRTPRLG or WRTNRLG LDOs.
- Write data beginning with a block of heading characters to a System/3 or System/370 CPU. Use the WRTHDR LDO.
- End an NCP session with a terminal. Use the DISCONCT LDO.
- Erase the entire display screen of a 3270 display station (or a 2265 display station attached to a 2770 Data Communication System) and write a block of data, or erase only the unprotected portion of a 3270 display station screen and write no data. Although these operations are available through the WRITE macro instruction, the latter does not allow erasure to be combined with a conversational WRITE operation. If the ERASELBM or ERASELBT LDOs are followed by a chained READ LDO, however, a combined erase-write-read operation can be achieved. If the EAU LDO is followed by a chained READ LDO, a combined erase-read operation can be achieved.

The LDO macro instruction generates a control block during program assembly that indicates one of the above I/O operations. The actual operation is performed when a DO macro instruction is executed.

Some LDOs can be combined to form a series of operations, much like channel command words can be combined to form a channel program.

An LDO has four parts:



A A *command* indicator. This indicates the specific I/O operation to be performed.

B A *chaining* indicator. A flag can be set in some of the LDOs that cause DO processing to also use the next contiguous LDO in storage.

C A *length* indicator. This indicates the length of the data or data area. (The RPL also has corresponding data address and length fields, but these indicate the LDO address, not the data address, when the RPL is used by DO.)

D A *data* address or a *data area* address. Depending on the command, this address indicates an area containing data, or a storage area where data is to be placed.

Although the operands corresponding to these parts are optional when the LDO macro instruction is coded, the command and usually the data address and length indicator must be set before the DO macro instruction is executed. The LDO command descriptions below indicates whether these fields must be set. Assembler language must be used if you want to set LDO fields during program execution. You cannot use the manipulative macro instructions to modify LDO fields.

Name	*Operation*	*Operands*
[symbol]	LDO	[CMD=command] [, ADDR=data address or data area address] [, LEN=data length or data area length] [, FLAGS=C|D]

CMD=command

Format: After the CMD keyword, code any of the following values:

COPYLBM
COPYLBT
READ
READBUF
WRITE
WRITELBM
WRITELBT
WRTHDR
WRTNRLG
WRTPRLG
ERASELBM
ERASELBT
EAU
DISCONCT

Function: Indicates the specific I/O operation to be performed.

COPYLBM
This LDO causes the entire contents of a 3277 Display Station buffer to be copied to a printer or another display unit in the same remotely attached information display system. ACF/VTAM sends the copy request as a message by adding an ETX line control character at the end. This LDO applies only to remotely attached 3270 terminals.

The ADDR and LEN operands of this LDO must indicate the location and length of a data area containing (1) a 3270 copy control character and (2) the rightmost 2 bytes of the "from" device's CID. For an explanation of the copy control character, refer to *IBM 3270 Information Display System Component Description,* GA27-2749.

The ARG field of the DO macro instruction's RPL must contain the CID of the "to" device.

COPYLBT
The COPYLBT LDO performs like the COPYLBM LDO, except that after the data has been copied, ACF/VTAM waits for the receiving device's acknowledgment, and sends an EOT character after the acknowledgment is received. (The LBM and LBT in the COPYLBM and COPYLBT LDOs stand respectively for "last block in message" and "last block in transmission.")

READ
The READ LDO obtains a block of data from a System/3 or System/370 CPU and places it in a storage area in the application program.

The READ LDO causes ACF/VTAM to perform the same action that a READ macro instruction does. However, a READ LDO can be command-chained after a WRTPRLG or WRTNRLG LDO. This allows the application program to either (1) send a negative acknowledgment to the device and then reread the data sent by it or (2) send a positive acknowledgment to the device and then read the next block of data (or EOT character) sent by it. By generating its own responses in this manner, the application program can send leading graphic characters along with the response.

If, at the time DO is executed, no solicited data is in ACF/VTAM buffers from the terminal, ACF/VTAM first solicits data from the terminal. This "implicit" solicitation operates as if a SOLICIT macro instruction had been issued.

The ARG field of the DO macro instruction's RPL must contain the CID of the device. The ADDR and LEN fields of the READ LDO must indicate the location and length of the storage area where the data is to be placed.

If the data to be placed there is too long to fit, and the TRUNC option code is in effect, the excess data is discarded. If the KEEP option is in effect instead of TRUNC, as much data as will fit is placed in the input area, and the length of the moved data is placed in RECLEN (so RECLEN=LEN), and the LDO's address is placed in the RPL's AAREA field. The excess data can be obtained with another READ LDO or with a READ macro instruction.

READBUF

The READBUF (read buffer) LDO causes the entire contents of a 3275 or 3277 Display Station's buffer to be placed in an area in the application program. ACF/VTAM sends the device-control characters required to distinguish this kind of input operation from a normal read operation (which obtains data only when the terminal operator enters data and presses ENTER). This LDO applies to both locally and remotely attached 3270 terminals.

The ARG field of the DO macro instruction's RPL must contain the CID of the sending device.

The ADDR and LEN operands of this LDO indicate the address and length of the storage area where the data is to be placed. The action taken when the data is too long to fit is the same as described above for READ.

WRITE

The WRITE LDO writes a block of data to a System/3 or System/370 CPU. For these devices, the WRITE LDO works exactly like a WRITE macro instruction with a BLK option code; an STX character is added to the beginning of the data, and an ETB line control character is added to the end. However, if a WRITE LDO is command-chained after WRTHDR LDO (by specifying FLAGS=C on the WRTHDR LDO), this sequence is written:

```
S             S             E
O   heading   T    text     T
H             X             B
```

The ADDR and LEN operands of the WRITE LDO must indicate the location and length of the text data to be written. The ARG field of the DO macro instruction's RPL must contain the CID of the receiving device.

WRITELBM

The WRITELBM LDO writes a block of data to a System/3 or System/370 CPU. For these devices, WRITELBM works exactly like a WRITE macro instruction with an LBM option code; an STX character is added to the beginning of the data, and an ETX character is added to the end. However, if a WRITELBM LDO is chained after a WRTHDR LDO, this sequence is written:

```
S              S          E
O   heading    T   text   T
H              X          X
```

The ADDR and LEN operands of the WRITELBM LDO must indicate the location and length of the text to be written. The ARG field of the DO macro instruction's RPL must contain the CID of the receiving device.

WRITELBT

The WRITELBT writes a block of data to a System/3 or System/370 CPU. For these devices, WRITELBT works exactly like a WRITE macro instruction with an LBT option code; the data is preceded with an STX character and followed with an ETX character, and when an acknowledgment is received from the device, an EOT character is sent. However, if a WRITELBT LDO is chained after a WRITHDR LDO, this sequence is written:

```
S              S          E   E
O   heading    T   text   T • O
H              X          X | T
                            |
         acknowledgment     |
         received ------- --┘
```

The ADDR and LEN operands of the WRITELBT LDO must indicate the location and length of the text to be written. The ARG field of the DO macro instruction's RPL must contain the CID of the receiving device.

WRTHDR

The WRTHDR LDO writes a block of heading characters to a System/3 or System/370 CPU. The heading characters are provided by the user; ACF/VTAM inserts an SOH character at the beginning of the block and an ETB character at the end.

If a WRITE, WRITELBM, or WRITELBT LDO is chained to a WRTHDR LDO (by specifying FLAGS=C on the WRTHDR LDO), the ETB character is not inserted after the heading. See the above descriptions of the WRITE, WRITELBM, and WRITELBT commands.

The ADDR and LEN operands of this LDO must indicate the location and length of the heading characters to be written. The ARG field of the RPL being used by the DO macro instruction must contain the CID of the receiving device.

WRTNRLG

The WRTNRLG LDO (write negative response with leading graphics) sends a NAK character, accompanied by up to seven leading graphic characters, to a System/3 or System/370 CPU. WRTNRLG can be used only if it is command-chained before a READ LDO (by specifying FLAGS=C on the WRTNRLG LDO) and if BLOCK has been specified for the device's NIB.

The ADDR and LEN operands of the WRTNRLG LDO must indicate the location and number of graphic characters to be used. The ARG field of the DO macro instruction's RPL must contain the CID of the receiving device.

WRTPRLG

The WRTPRLG LDO (write positive response with leading graphics) sends an ACK0 or ACK1 sequence, accompanied by up to seven leading graphic characters, to a System/3 or System/370 CPU. WRTPRLG can be used only if it is command-chained before a READ LDO (by specifying FLAGS=C on the WRTPRLG LDO) and BLOCK has been specified for the device's NIB.

The ADDR and LEN operands of the WRTPRLG LDO must indicate the location and number of graphic characters to be used. The ARG field of the DO macro instruction's RPL must contain the CID of the receiving device.

ERASELBM

The ERASELBM LDO (erase, write last block of message) erases the screen of a 3270 display station or the screen of a 2265 display station attached to a 2770 Data Communication System. It then writes a block of data ending with STX to the terminal. A READ LDO can be chained after an ERASELBM LDO.

The ADDR and LEN operands of the ERASELBM LDO must indicate the location and length of the data to be written. The ARG field of the DO macro instruction's RPL must contain the CID of the terminal.

ERASELBT

The ERASEBLT LDO (erase, write last block of transmission) works exactly like the ERASELBM LDO, except that after the data is sent to the terminal and an acknowledgement is received, an EOT character is sent. A READ LDO can be chained after an ERASELBT LDO.

EAU

The EAU LDO (erase all unprotected) erases the unprotected portion of a 3270 display station's screen. No data is written to the terminal. A READ LDO can be chained after an EAU LDO.

The ARG field of the DO macro instruction's RPL must contain the CID of the terminal.

DISCONCT

The DISCONCT LDO (disconnect) sends an EOT to the terminal and terminates the NCP session with the terminal. The ARG field of the DO macro instruction's RPL must contain the CID of the terminal.

ADDR=data address or data area address

Indicates the location of the data or data area to be used when the LDO is processed.

For COPYLBM and COPYLBT LDOs, ADDR points to a 3270 copy control character and rightmost 2 bytes of the "from" device's CID. For the READ and READBUF LDOs, ADDR indicates where the data obtained by these LDOs is to be placed. For the output LDOs, ADDR indicates the location of the data that is to be written to a device.

If you omit this operand, the ADDR field is set to 0. Register notation is not permitted.

LEN=data length or data area length

Indicates the length (in bytes) of the data or data area specified in ADDR.

For COPYLBM and COPYLBT LDOs, this value should always be set to 3. For READ and READBUF LDOs, ACF/VTAM uses this value to determine whether the data to be placed there is too big to fit. For all output LDOs, LEN indicates how many bytes of data are to be written.

Format: The maximum length you can specify is 32,767 bytes. If you omit this operand, the LEN field is set to 0.

Register notation is not permitted.

FLAGS=C|D

Indicates the action that the DO macro instruction is to take after it has used this LDO. The presence of this operand indicates that DO is to continue with the next contiguous LDO in storage. FLAGS=C (command chaining) indicates that the entire LDO is to be used. FLAGS=D (data chaining) indicates that only the ADDR and LEN fields of the next LDO are to be used. The absence of this operand indicates to DO that no further LDOs are to be used. A maximum of 100 LDO's may be chained together.

Note: *A WRTNRLG or a WRTPRLG LDO must be command-chained to a READ LDO; a READ LDO cannot be command-chained to another READ LDO, and a COPYLBM or a COPYLBT LDO cannot be command-chained to any other LDO.*

Examples

The following example illustrates the use of the COPYLBM LDO.

Assume that the CID of the 'to' device is already in the ARG field of the DO macro's RPL, and that the CID of the 'from' device (the CID that must be manipulated) is in the CID field of NIB1.

```
PRIME        SHOWCB     NIB=NIB1,AREA=TEMP,LENGTH=4,FIELDS=CID
             MVC        CPYSCRN1+1(2),TEMP+2
CPYSCRN      DO         RPL=RPL1,AREA=LDO1
             .
             .
             .
LDO1         LDO        CMD=COPYLBM,ADDR=CPYSCRN1,LEN=3
TEMP         DS         F         (TEMP=WORK AREA FOR 'FROM' CID)
CPYSCRN1     DC         X'630000' (63=A COPY CONTROL CHARACTER,
*                       0000=FINAL AREA FOR RIGHT
*                       HALF OF 'FROM' CID)
```

The purpose of the two instructions at PRIME is to obtain the CID of a 'from' device (from NIB1 into TEMP) and place the rightmost 2 bytes of the CID into a data area pointed to by LDO1. When CPYSCRN is executed, the device whose CID is in RPL1's ARG field will be the recipient of the copy operation.

The next example shows how a READBUF LDO might be used.

```
READ2        DO         RPL=RPL2,ARG=(7),AREA=READLDO
             .
             .
             .
READLDO      LDO        CMD=READBUF,ADDR=WORKAREA,LEN=480
WORKAREA     DS         CL480
```

When READ2 is executed, register 7 must contain the CID of a 3270 display unit. ACF/VTAM will obtain the entire contents of that device's buffer and place it in WORKAREA.

The following example illustrates the use of the WRTHDR LDO.

```
WRITEIT      DO         RPL=RPL3,ARG=(8),AREA=HDRLDO
             .
             .
             .
HDRLDO       LDO        CMD=WRTHDR,ADDR=HDRBLOK,LEN=5,FLAGS=C
TXTLDO       LDO        CMD=WRITE,ADDR=TXTBLOK,LEN=16
HDRBLOK      DS         CL5
TXTBLOK      DS         CL200
```

When WRITEIT is executed, ACF/VTAM sends a heading block from AHDRBLOK combined with a text block from ATXTBLOK. The line control characters added by ACF/VTAM make the sequence look like this:

```
S     data     S     data     E
O     from     T     from     T
H  AHDRBLOK    X  ATXTBLOK    B
```

The following example shows how a WRTPRLG LDO can be command-chained to a READ LDO.

```
POSRSP      DO      RPL=RPL4,ARG=(9),AREA=RSPLDO
                    .
                    .
                    .
RSPLDO      LDO     CMD=WRTPRLG,ADDR=GRAPHICS,LEN=7,FLAGS=C
THENREAD    LDO     CMD=READ,ADDR=INAREA,LEN=480
GRAPHICS    DC      C'CPU3003'
```

When POSRSP is executed, register 9 must contain the CID of a device. ACF/VTAM sends a positive response (ACK0 or ACK1) to the device, accompanied by seven leading graphic characters from GRAPHICS. The next LDO causes ACF/VTAM to read the next block of data from the device.

MODCB–Modify the Contents of Control Block Fields

MODCB modifies the contents of one or more fields in an ACB, EXLST, RPL, or NIB control block. MODCB works with control blocks created either with declarative macro instructions or with the GENCB macro instruction.

The user of the MODCB macro instruction indicates the location of the control block, the fields within the control block to be modified, and the new values that are to be placed or represented in those fields.

Any field whose contents can be set with the ACB, EXLST, RPL, or NIB macro instruction can be modified by the MODCB macro instruction. The operands used to do this are the same as those used when the control block is created.

The following restrictions apply to the use of MODCB:

- An ACB cannot be modified after an OPEN macro has been issued for it.
- An exit list (EXLST) cannot have exits added to it with the MODCB macro instruction. If an exit list field is not specified in the EXLST macro instruction, do not attempt to modify that field with a MODCB macro instruction. MODCB can, however, be used to change dummy exit addresses to valid addresses.
- An RPL cannot be modified while a request using that RPL is pending, that is, while the RPL is active.
- A NIB should not be modified while its address is in the NIB field of an active RPL.
- The AM field of the ACB, EXLST, and RPL control blocks cannot be modified. Once a control block has been generated in an ACF/VTAM-compatible form, it cannot later be modified for use with another access method.

List, generate, and execute forms of the MODCB macro instruction are available; they are designated by the MF operand.

Because there are a large variety of formats in which the various MODCB operand values can be specified, the operand format specifications have been tabulated in Appendix E, and do not appear here.

Note: *For terminals that use basic mode, PROC and USERFLD data in the NIB can be changed with MODCB; however, ACF/VTAM must also be notified of these changes with CHANGE macro instructions. See the description of the CHANGE macro instruction for more information.*

Name	*Operation*	*Operands*
[symbol]	MODCB	AM=VTAM , ACB=acb address , EXLST=exit list address , RPL=rpl address , NIB=nib address , field name=new value ... [, MF=list, generate, or execute form parameters]

AM=VTAM

Identifies this macro instruction as an ACF/VTAM macro instruction. This operand is required.

ACB=acb address
EXLST=exit list address
RPL=rpl address
NIB=nib address

Indicates the type and location of the control block whose fields are to be modified.

field name=new value

Indicates a field in the control block to be modified and the new value that is to be contained or represented within it.

For *field name,* code the keyword of any operand that can be coded in the macro instruction corresponding to the ACB, EXLST, RPL, or NIB operand. If RPL=RPL1 is coded, for example, the keyword of any operand in the RPL macro instruction can be coded. ARG=(register) can also be coded.

For *new value,* code any value that could be used in an ACB, EXLST, RPL, or NIB macro instruction, or use one of the formats indicated in Appendix E.

MF=list, generate, or execute form parameters

Indicates that a list, generate, or execute form of MODCB is to be used. Omitting this operand causes the standard form of MODCB to be used. See Appendix F for a description of the nonstandard forms of MODCB.

Example

```
MOD1          MODCB         RPL=(5),OPTCD=(ASY,SPEC,CS),AM=VTAM
```

MOD1 activates the ASY, SPEC, and CS option codes in an RPL. The settings for the other option codes are not affected. The address of this RPL must be in register 5 when MOD1 is executed.

Return of Status Information

After MODCB processing is completed, register 15 indicates whether or not the operation completed successfully. If the operation completed successfully, register 15 is set to 0; if it completed unsuccessfully, register 15 is set to either 4, 8, or 12 (DOS/VS only). If it is set to 4 or 12, register 0 is also set indicating the specific nature of the error (see Appendix D).

NIB–Create a Node Initialization Block

The NIB generated by the NIB macro instruction (1) is used to identify which terminal or logical unit is to be connected to or disconnected from the application program or (2) is used to identify the object of an INQUIRE macro instruction. It also indicates how ACF/VTAM is to handle communication between the application program and the terminal or logical unit. For example, if MODE=RECORD is specified in the NIB when the session is established, all subsequent communication with that logical unit must be in record mode.

For certain macro instructions, NIBs can be grouped together into lists. When requests are directed towards a NIB that is the first in a NIB list, ACF/VTAM considers all of the terminals or logical units represented in the NIB list to be the objects of the request, not just the terminal or logical unit represented by the first NIB.

A field called the CID field is part of every NIB. When the terminal or logical unit is connected to the application program, ACF/VTAM generates the CID to identify the session and places it both in the NIB's CID field and in the ARG field of the RPL being used by the OPNDST macro instruction. (For NIB lists, the CID placed in the ARG field is not meaningful.) Subsequent I/O requests directed toward that specific terminal or logical unit must have the CID of the associated session in the I/O request's RPL.

The NIB macro instruction causes the NIB to be built during program assembly; the NIB macro instruction is not executable. The NIB is built on a fullword boundary. A NIB can be built during program execution with a GENCB macro instruction.

<table>
<tr><th><i>Name</i></th><th><i>Operation</i></th><th><i>Operands</i></th></tr>
<tr><td>[symbol]</td><td>NIB</td><td>[NAME=name in resource definition table]
[,USERFLD=fullword of data]
[,LISTEND=YES|NO]
[,MODE=BASIC|RECORD]
[,SDT=APPL|SYSTEM]
[,EXLST=exit list address]
[,ENCR=REQD|SEL|NONE]
[,RESPLIM=1| response limit]
[, LOGMODE=0|C' '|logon mode]
[, BNDAREA=0| bind area address]
[[CA|CS|RPLC]
[, NDFASYX|DFASYX]
[, NRESPX|RESPX]
[, NCONFTXT|CONFTXT]
[, KEEP|TRUNC]
[, SYSRESP|APPLRESP]
[, ORDRESP|NORDRESP]
[, BLOCK|MSG|TRANS|CONT]
[, LGOUT|NLGOUT]
[, LGIN|NLGIN]
, PROC=([, TMFLL|NTMFLL])
[, NEIB|EIB]
[, TIMEOUT|NTIMEOUT]
[, ERPIN|NERPIN]
[. ERPOUT|NERPOUT]
[, NMONITOR|MONITOR]
[. NELC|ELC]
[, NBINARY|BINARY]]</td></tr>
</table>

NAME=name in resource definition table

Associates the NIB with a resource represented in the resource definition table. (The resource definition table is built by the user during ACF/VTAM definition.)

Format: Use the name of the PU, LU, CLUSTER, TERMINAL, LINE, COMP, LOCAL, CDRSC, or APPL entry that represents one or more terminals or application programs in the resource definition table. Using unframed EBCDIC characters, code this name as it appears in the input to the ACF/VTAM network definition. See the *ACF/VTAM System Programmer's Guide* for your operating system.

Example: NAME=LU13

Note: *Although this operand is optional, the NAME field should be set by the time a CLSDST, OPNDST, SIMLOGON, INTRPRET, REQSESS, TERMSESS, OPNSEC, or INQUIRE macro instruction is issued for this NIB. One exception: When OPNDST with an ACCEPT processing option and an ANY option code is issued, the NAME field need not be set, since* ACF/VTAM *will place the name of the connected terminal or logical unit in this field.*

If you omit this operand, the entire 8-byte NAME field is set to EBCDIC blanks.

USERFLD=full word of data

Indicates any 4 bytes of data that the application program wants to associate with the terminal or logical unit represented by this NIB. When you subsequently issue I/O requests for the terminal or logical unit, ACF/VTAM will place whatever data you have set in USERFLD into the USER field of the I/O request's RPL.

The 4 bytes of data can be anything the application program chooses to associate with the terminal or logical unit. It can be the program's own version of the terminal's or logical unit's symbolic name. This would be useful in the case of a RECEIVE or READ macro with OPTCD=ANY, since the setting of the USER field in the macro's RPL provides an efficient way for the program to establish the identity of the terminal or logical unit from which the data was just obtained.

Format: Code the 4 bytes of data in either character, fixed-point, or hexadecimal format, or, if an address is desired, code it as an A-type or V-type address constant. Register notation cannot be used.

Examples:

```
USERFLD=C'LU01'
USERFLD=F'100'
USERFLD=X'00043E0'
USERFLD=A(RTN1)
USERFLD=V(EXTRTN)
```

Note: *For basic mode only, use the MODCB and CHANGE macro instructions to change the contents of the USERFLD field after an OPNDST macro instruction has been issued for the NIB.*

If you omit this operand, the USERFLD field is set to zero.

LISTEND=<u>YES</u>|NO

Allows the application program to group NIBs into lists. LISTEND=YES indicates that this NIB is the last in a list (or is an isolated NIB not part of a list). LISTEND=NO indicates that this NIB and the NIB immediately following it in storage are part of a NIB list. Any number of NIBs can be grouped together by specifying LISTEND=NO for each one except the last. LISTEND=YES must be specified for an OPNSEC, REQSESS, and TERMSESS macro instruction.

Example: The following use of the LISTEND operand effectively groups the Boston NIBs into one group, the Chicago NIBs into another, and defines the Portland NIB as a "list" of one.

```
BOSTON        NIB    NAME=BOSTON1,MODE=RECORD,LISTEND=NO
              NIB    NAME=BOSTON2,MODE=RECORD,LISTEND=YES
CHICAGO       NIB    NAME=CHICAGO1,MODE=RECORD,LISTEND=NO
              NIB    NAME=CHICAGO2,MODE=RECORD,LISTEND=NO
              NIB    NAME=CHICAGO3,MODE=RECORD,LISTEND=YES
PORTLAND      NIB    NAME=PORTLAND,MODE=RECORD,LISTEND=YES
```

MODE=BASIC|RECORD

Indicates whether basic-mode macro instructions (such as READ and WRITE) or record-mode macro instructions (such as SEND and RECEIVE) are to be used to communicate with the terminal or logical unit. Except for the 3270, the application program has no choice; MODE=BASIC must be specified for all BSC and start-stop terminals, and MODE=RECORD must be specified for all logical units. The 3270 can be handled in either mode.

The application program that will act as the primary end of the session can be designed to handle both modes, since the INQUIRE macro instruction (OPTCD=DEVCHAR) can be used before connection to determine which mode is permissible. A simpler and better procedure, however, would be to maintain one ACB (application program, in effect) for BSC and start-stop terminals and another ACB for logical units. Using separate ACBs eliminates the need to repeatedly test and set the mode type.

Note: *This field must be filled in before the NIB can be used.*

SDT=APPL|SYSTEM (Record mode only)

For a primary application program, this operand indicates whether the application program or ACF/VTAM is to send the first Start Data Traffic (SDT) command to the logical unit. If SDT=SYSTEM is used, ACF/VTAM automatically sends an SDT command as part of the connection process before posting the OPNDST RPL complete. If SDT=APPL is coded, ACF/VTAM does not send an SDT command until the application program tells it to do so (by issuing a SESSIONC macro instruction with CONTROL=SDT). The use of this operand is determined by the transmission services profile that is specified in the session parameters used for connection (see Appendix J).

For a secondary application program, this operand (when coded) and the NIB are used when executing an OPNSEC macro instruction and indicate whether the secondary application program or ACF/VTAM will respond to a Start Data Traffic (SDT) command.

EXLST=exit list address

Indicates an EXLST control block that contains the address of a DFASY, RESP, or SCIP exit routine (or contains the addresses of any combination of these exit routines).

Exit routines indicated by a NIB (NIB-oriented exit routines) are scheduled when ACF/VTAM receives input (with the exception of a Bind command) from the logical unit associated with the NIB. If input is received and no NIB-oriented exit routine is specified, ACF/VTAM then satisfies any pending RECEIVE macros or schedules the appropriate ACB-oriented exit routine (if any). See the *ACF/VTAM Macro Language Guide* for more information on the scheduling of these exit routines.

Figure 5 shows two sets of NIB-oriented exit routine addresses and one set of ACB-oriented exit routine addresses. When input from the logical unit associated with NIB1 arrives, the appropriate EXLST1 exit routine is scheduled. When input from the logical unit associated with NIB2 arrives, ACF/VTAM checks EXLST2 for the appropriate exit routine. If there is no exit routine specified (which in this example would be true if the input was a response, since EXLST2 has no RESP entry), ACF/VTAM satisfies any pending RECEIVE macros or checks for an ACB-oriented exit routine address in EXLSTA. When input from any other logical unit arrives, ACF/VTAM uses EXLSTA.

Note: *If you omit this operand, the NIB's EXLST field is set to 0.*

ENCR=REQD|SEL|NONE (Encrypt/Decrypt Feature only)

Indicates the level of cryptography for the session. If either REQD or SEL is specified, the session will not be established unless both ends of the session are capable of cryptography.

If REQD is specified, all data requests (STYPE=REQ, CONTROL=DATA) will be sent enciphered.

If SEL is specified, data requests will be enciphered on the basis of the RPL's CRYPT field setting. See RPL for a further description of the CRYPT field.

If NONE is specified or the default taken, no enciphering by ACF/VTAM will occur unless required by the receiving logical unit. If this is the case, ACF/VTAM will do all of the enciphering and deciphering transparently to the application program.

RESPLIM=1|response limit (Record mode only)

Indicates the maximum number of responded output requests that can be pending at one time. (A responded output request is a SEND with POST=RESP, STYPE=REQ, and CONTROL specifying data or a normal-flow, data flow control command.) If RESPLIM=0 is coded, ACF/VTAM imposes no limit on the number of pending responded output requests.

Note: *If this operand is omitted, the RESPLIM field is set to 1. The maximum value that can be coded is 65535.*

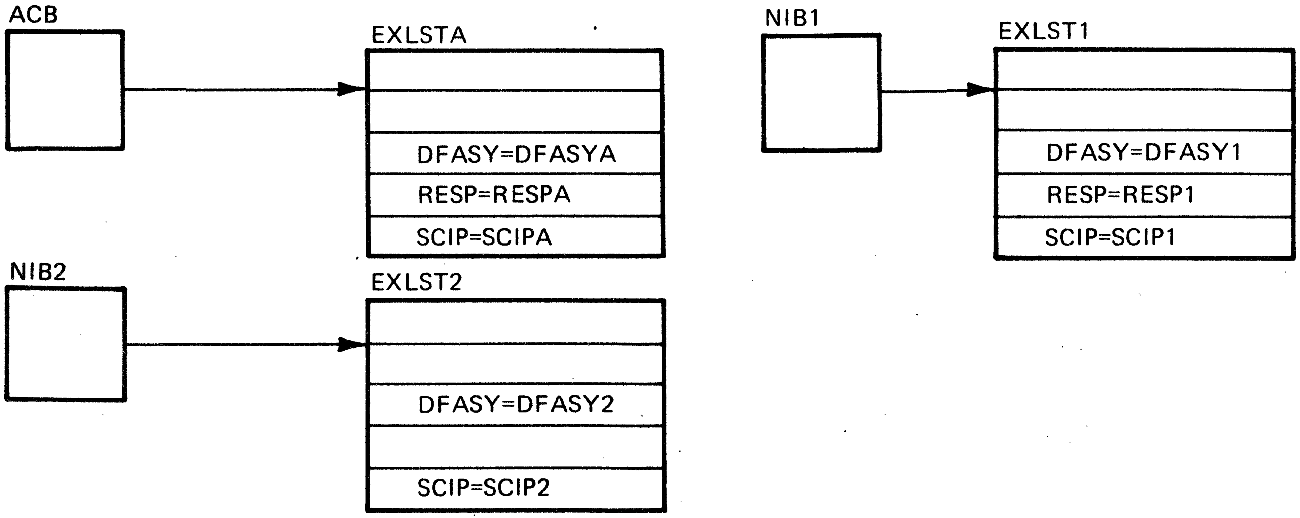


Figure 5. ACB-Oriented and NIB-Oriented Exit Routines

LOGMODE=0|C' '| logon mode name (Record mode only)

The LOGMODE field in a NIB that is pointed to by the NIB field of an RPL is used by the INQUIRE with OPTCD=SESSPARM, OPNDST, REQSESS, CLSDST with OPTCD=PASS, and SIMLOGON macro instructions. If a bind area is used with an OPNDST macro instruction, it will override any logon mode that is also present. Figure 6 through 10 summarize the use of the LOGMODE and BNDAREA operands.

When used by the INQUIRE OPTCD=SESSPARM macro:

- LOGMODE indicates that ACF/VTAM is to take the session parameters associated with a pending logon and any logon data, if present, and place them in the field pointed to by the AREA field of the RPL. The AREALEN field of the RPL must specify the length of the area.

  Return codes are returned if a match is not found (RTNCD=20, FDBK2=75) or if there is no pending logon (RTNCD=20, FDBK2=76).
- LOGMODE=C' ' indicates to ACF/VTAM that the default session parameters for the logical unit are to be returned in the field pointed to by the AREA field. The AREALEN field of the RPL must specify the length of the area.
- LOGMODE=*logon mode name* indicates to ACF/VTAM the logon mode name with which it is to search the logon mode table defined for the logical unit named in the NIB. If a match is found, the session parameters are returned in the field pointed to by the AREA field of the RPL. The AREALEN field of the RPL must specify the length of AREA. If a match is not found, return codes are returned (RTNCD=20, FDBK2=75).

When used by OPNDST (OPTCD=ACCEPT) macro instruction:

- LOGMODE=0 and BNDAREA=0 indicate the ACF/VTAM is to take the session parameters from a pending logon and construct a Bind command which will be sent to the logical unit establishing the connection. If there is no pending logon, return codes are returned (RTNCD=20, FDBK2=76).
- LOGMODE=C' ' and BNDAREA=0 indicate the ACF/VTAM is to take the default session parameters (those making up the first entry in the logon mode table for the logical unit named in the NIB) and construct a Bind command which will be sent to the logical unit. If there is no pending logon, return codes (RTNCD=20, FDBK2=76) are set.
- LOGMODE=*logon mode name* and BNDAREA=0 indicate to ACF/VTAM the logon mode name with which it is to search the logon mode table defined for the logical unit named in the NIB. The logical unit must be in the same domain as the application program that issued the OPNDST macro instruction. If a match is found, the session parameters associated with that logon mode name are used to construct a Bind command, which is sent to the logical unit establishing the connection. Return codes are returned if a match is not found, if the logical unit is in another domain (RTNCD=20, FDBK2=75) or if there is no pending logon (RTNCD=20, FDBK2=76). The BNDAREA operand must be 0.
- LOGMODE=0|C' '|*logon mode name* and BNDAREA=*bind area address* indicate that the session parameters in the specified bind area are to be used to construct the Bind command. The LOGMODE operand is ignored. Return codes are returned if there is no pending logon (RTNCD=20, FDBK2=76).

When used by the OPNDST (OPTCD=ACQUIRE) macro instruction:

- LOGMODE=0|C' ' and BNDAREA=0 indicate to ACF/VTAM that default session parameters (those making up the first entry in the logon mode table defined for the logical unit named in the NIB) are to be used to construct the Bind command, which is sent to the logical unit establishing the connection.

NIB specifies		INQUIRE with OPTCD = SESSPARM issued for a logical unit in	
LOGMODE =	BNDAREA =	the same domain	a different domain
0	0	The session parameters associated with the first pending logon[1] are placed in the RPL's AREA field[4].	Same as same domain
C' '	0	The session parameters associated with the default logon mode[2] table associated with the logical unit are placed in the RPL's AREA field.[4]	Invalid option
logon mode	0	The session parameters are associated with the logon mode specified are placed in the RPL's AREA field. If the logon mode is not in the logon mode table associated with the logical unit, an error code is returned.	Invalid option
	bind area address	This field is ignored[3].	This field is ignored[3].

[1] A pending logon can originate from:
A LOGAPPL specification in a definition statement
A VARY LOGON command entered by the network operator (automatic logon)
An Initiate command issued by the logical unit
A logon entered by a terminal user
A CLSDST with OPTCD=PASS macro instruction
A SIMLOGON macro instruction
A REQSESS macro instrcution
Note that ACF/VTAM is unable to determine the source of a pending logon. The application programmer must know in advance the source of the pending logons and the logon modes that are possible and code the program accordingly.

[2] The default logon mode is the first entry in the logon mode table associated with the logical unit; however, if DLOGMOD was specified in a definition macro for the logical unit, the default logon mode specifies the logon mode table entry named in the DLOGMOD keyword.

[3] The bind area address is ignored, and the session parameters are determined by the LOGMODE value. The logon mode table is associated with the logical unit named in the NIB.

[4] If there is no pending logon or the session parameters cannot be determined, an error code is returned.

Figure 6. Determining Session Parameters for an INQUIRE Macro Instruction

NIB specifies		OPNDST with OPTCD = ACCEPT issued for a logical unit in	
LOGMODE=	BNDAREA=	the same domain	a different domain
0	0	The session parameters associated with the first pending logon[1] are used[3].	Same as same domain
C' '	0	The session parameters associated with the default logon mode[3] table associated with the logical unit are used[3].	Invalid option
Logon mode	0	The session parameters associated with the logon mode specified are used. If the logon mode is not in the logon mode table associated with the logical unit, an error code is returned.	Invalid option
	bind area address	The session parameters associated with the bind area specified are used.	Same as same domain

[1] A pending logon can originate from:
A LOGAPPL specification in a definition statement
A VARY LOGON command entered by the network operator (automatic logon)
An Initiate command issued by the logical unit
A logon entered by a terminal user
A CLSDST with OPTCD=PASS macro instruction
A SIMLOGON macro instruction
A REQSESS macro instruction
Note that ACF/VTAM is unable to determine the source of a pending logon. The application programmer must know in advance the source of the pending logons and the logon modes that are possible and code the program accordingly.

[2] The default logon mode is the first entry in the logon mode table associated with the logical unit; however, if DLOGMOD was specified in a definition macro for the logical unit, the default logon mode specifies the logon mode table entry named in the DLOGMOD keyword.

[3] If the session parameters cannot be determined, an error code is returned.

Figure 7. Determining Session Parameters for an OPNDST ACCEPT Macro Instruction

NIB specifies		
LOGMODE=	BNDAREA=	OPNDST with OPTCD = ACQUIRE issued for a logical unit in the same domain or in a different domain
0	0	The session parameters associated with the default logon mode[1] in the logon mode table for the logical unit are used[2].
C' '	0	Same as specifying LOGMODE=0 and BNDAREA=0.
logon mode	0	The session parameters associated with the logon mode specified are used[2].
	bind area address	The session parameters associated with the bind area specified are used.

[1] The default logon mode is the first entry in the logon mode table associated with the logical unit; however, if DLOGMOD was specified in a definition macro for the logical unit, the default logon mode specifies the logon mode table entry named in the DLOGMOD keyword.

[2] If the logon mode is not in the logon mode table associated with the logical unit, an error code is returned.

Figure 8. Determining Session Parameters for an OPNDST ACQUIRE Macro Instruction

NIB specifies LOGMODE=	BNDAREA=	SIMLOGON or CLSDST with OPTCD=PASS issued for a logical unit in the same domain or in a different domain
0	0	The session parameters associated with the default logon mode[1] in the logon mode table for the logical unit are used[2].
C' '	0	Same as specifying LOGMODE=0 and BNDAREA=0.
logon mode	0	The session parameters associated with the logon mode specified are used[2].
	bind area address	This field is ignored[3].

[1] The default logon mode is the first entry in the logon mode table associated with the logical unit; however, if DLOGMOD was specified in a definition macro for the logical unit, the default logon mode specifies the logon mode table entry named in the DLOGMOD keyword.

[2] If the logon mode is not in the logon mode table associated with the logical unit, an error code is returned.

[3] The bind area address is ignored, and the session parameters are determined by the LOGMODE value. The logon mode table is associated with the logical unit named in the NIB.

Figure 9. Determining Session Parameters for a SIMLOGON or CLSDST PASS Macro Instruction

NIB specifies LOGMODE=	BNDAREA=	REQSESS issued for an application program in the same domain or in a different domain
0	0	The session parameters associated with the default logon mode[1] in the logon mode table associated with the application program issuing the REQSESS macro instruction are used.
C' '	0	Same as specifying LOGMODE=0 and BNDAREA=0.
logon mode	0	The session parameters associated with the logon mode specified are used[2].
	bind area address	This field is ignored[3].

[1] The default logon mode is the first entry in the logon mode table associated with the logical unit; however, if DLOGMOD was specified in a definition macro for the logical unit, the default logon mode is the DLOGMOD entry.

[2] If the logon mode is not in the logon mode table associated with the application program issuing the REQSESS macro, an error code is returned.

[3] The bind area address is ignored, and the session parameters are determined by the LOGMODE value. The logon mode table is associated with the application program that issued the REQSESS macro instruction and not the application program named in the NIB (the primary application program).

Figure 10. Determining Session Parameters for a REQSESS Macro Instruction

- LOGMODE=*logon mode name* and BNDAREA=0 indicate to ACF/VTAM the logon mode name with which it is to search the logon mode table defined for the logical unit named in the NIB. If a match is found, the session parameters associated with that logon mode name are used to construct a Bind command, which is sent to the logical unit establishing the connection. The BNDAREA operand must be 0. If a match is not found, return codes (RTNCD=20, FDBK2=75) are returned.
- LOGMODE=0|C' '| *logon mode name* and BNDAREA=*bind area address* indicates that the session parameters in the specified bind area are to be used to construct the Bind command. The LOGMODE operand is ignored.

When used by the SIMLOGON or CLSDST with OPTCD=PASS macro instruction:

- LOGMODE=0|C' ' indicates to ACF/VTAM that the default session parameters for the logical unit are to be used as a part of the pending logon which eventually results from the request.
- LOGMODE=*logon mode name* indicates to ACF/VTAM the logon mode name with which it is to search the logon mode table for the logical unit named in the NIB. If a match is found, the session parameters associated with that logon mode name are to be used as a part of the pending logon.

When used by a REQSESS macro instruction:

- LOGMODE=0|C' ' indicates to ACF/VTAM that the default session parameters for the secondary application program are to be used as a part of the pending logon which will be queued as a result of the REQSESS macro instruction.
- LOGMODE=*logon mode name* indicates to ACF/VTAM the logon mode name with which it is to search the logon mode table for the application program that issued the REQSESS macro instruction. If a match is found, the session parameters associated with that logon mode name are to be used as part of the pending logon.

BNDAREA=0| bind area address (Record mode only)

Permits the application program to explicitly specify a set of session parameters that ACF/VTAM is to use in constructing a Bind command that will be sent to a logical unit. The BNDAREA field in a NIB that is pointed to by the NIB field of an RPL is used by the OPNDST (OPTCD=ACCEPT or ACQUIRE) macro instruction. Session parameters specified in a bind area override session parameters available from any other source. Figures 6 through 10 summarize the use of the LOGMODE and BNDAREA operands.

When used by the OPNDST macro instruction:

- BNDAREA=0 indicates that there is no bind area defined and that ACF/VTAM should use the LOGMODE field in the NIB to determine the session parameters to be used or use those session parameters associated with a pending logon. See Figures 6 and 7.
- BNDAREA=*bind area address* indicates the location of a bind area that contains the session parameters that are to be used by ACF/VTAM to construct the Bind command, which is sent to the logical unit to establish the session. The application program is responsible for placing the appropriate session parameters into the bind area. When the BNDAREA operand specifies an address, the LOGMODE operand is ignored.

PROC=processing option|(processing option,...)

Indicates options ACF/VTAM is to follow for subsequent I/O requests involving the terminal or logical unit connected using this NIB.

Format: Code as indicated in the assembler format table above. The parentheses can be omitted if only one option code is selected.

```
NIB          NAME=TERM13,MODE=RECORD,
             PROC=(DFASYX,RESPX,CONFTXT)

NIB          NAME=TERM14,MODE=BASIC,
             PROC=BLOCK
```

Note: *Not all processing options are valid for all types of devices. See Figure 12 at the end of this macro instruction description to see which processing options are valid for the devices supported by ACF/VTAM.*

CA|CS|RPLC

Applies for a logical unit or terminal when input received from it satisfies a RECEIVE. This operand is useful for differentiating terminals and logical units by the type of request they may respond to. It overrides the CS/CA option codes that may have been specified in the RECEIVE's RPL, but not the RPL of any other type of macro instruction.

CS specifies that the connection should be put into continue-specific mode after this receive is completed for the input type that satisfies this RECEIVE. It can be used when a terminal or logical unit may not respond to any subsequent RECEIVE (OPTCD=ANY) macros. This might be the case if the terminal or logical unit normally sends multiple lines per transaction.

CA specifies that the connection should be put into continue-any mode after this receive is completed for the input type that satisfies the RECEIVE. It can be used when a terminal or logical unit can always respond to a RECEIVE (OPTCD=ANY) macro. This might be the case if the terminal or logical unit normally sends no more than one line per transaction.

RPLC, the default, specifies that the CS/CA option code in the RECEIVE RPL should be used when switching continue modes.

NDFASYX|DFASYX (Record mode only)

Indicates whether a DFASY exit routine is to be scheduled when expedited-flow requests arrive in ACF/VTAM's buffers from a logical unit.

When DFASYX is set for the logical unit's NIB and no other restrictions prevent the scheduling of the DFASY exit routine, the exit routine is scheduled. (Even if the exit routine cannot be scheduled, a RECEIVE OPTCD=ANY, RTYPE=DFASY will never be satisfied if the connection was established with PROC=DFASYX.) If NDFASYX is specified, the exit routine is not scheduled.

NRESPX|RESPX (Record mode only)

Indicates whether a RESP exit routine may be scheduled when responses arrive in ACF/VTAM's buffers from a logical unit. When RESPX is set for the logical unit's NIB and no other restrictions prevent the scheduling of the RESP exit routine, the exit routine is scheduled. (Even if the exit routine cannot be scheduled, a RECEIVE OPTCD=ANY, RTYPE=RESP will never be satisfied if the connection was completed with PROC=RESPX.) If NRESPX is set, the RESP exit routine is not scheduled.

NCONFTXT|CONFTXT

Indicates whether or not the data sent to or received from this terminal or logical unit is to be considered as "confidential." If CONFTXT is specified, the buffers used to hold the data are cleared before they are returned to their buffer pools. For NCONFTXT, no such clearing is done.

KEEP|TRUNC
Indicates whether overlength input data is to be kept or discarded.

When TRUNC is used, ACF/VTAM fills the input data area and discards the remainder. No error condition is raised. When KEEP is used, ACF/VTAM fills the input data area and saves the remainder for subsequent RECEIVE or READ macro instructions.

In the record mode, the presence of excess data can be determined by comparing the RPL's AREALEN field (input area size) with the RECLEN field (amount of incoming data). If the value in RECLEN exceeds the value in AREALEN, excess data has been kept (and will be used to satisfy the next appropriate RECEIVE). Note that when data is kept, the RESPOND field of the RPL is always set to NEX, NFME, NRRN.

In the record mode, the NIB's TRUNC-KEEP processing option is overridden if the KEEP TRUNC-NIBTK option code of the RECEIVE's RPL is set to KEEP or TRUNC. That is, the NIB's TRUNC-KEEP processing option is effective only if the NIBTK option code is set in the RPL.

In the basic mode, the RPL's FDBK field indicates the presence of excess data. If the EOB flag is set on (DATAFLG=EOB for a TESTCB macro instruction), the entire block is in the input data area and no excess data remains. If the EOB flag is set off, there is excess data.

SYSRESP|APPLRESP (Record mode only)
Indicates whether or not the application program is to respond to an expedited data flow control request (for example, a DFASY request). If PROC=SYSRESP is specified, ACF/VTAM responds to the request.

If PROC=APPLRESP is specified, the application program must respond to the expedited data flow control request using a SEND STYPE=RESP macro instruction. While either a positive or negative response may be sent, a definite response type 1 (FME) must be used in either case. The sequence number and command type (CONTROL) used in the response can be obtained from the RECEIVE RPL or the ACF/VTAM read-only RPL supplied in the applicable exit routine.

ORDRESP|NORDRESP (Record mode only)
Indicates whether or not certain designated normal-flow responses are to be handled by ACF/VTAM in a manner similar to normal-flow (DFSYN) requests. The ORDRESP| NORDRESP option is used in conjunction with the QRESP|NQRESP option in the RPL.

When an application program issues a request to a logical unit, it can specify how ACF/VTAM is to return the response. If the application program issues a SEND macro instruction with POST=SCHED, RESPOND=QRESP to a logical unit with the NIB option PROC=ORDRESP, ACF/VTAM, in effect, queues the response with other incoming normal-flow (DFSYN) reqeusts from that logical unit. This response cannot satisfy a RESP exit routine or a RECEIVE macro instruction with RTYPE=RESP. This queued response can only satisfy a RECEIVE RTYPE=DFSYN macro instruction but causes the RTYPE field to be set to DFSYN,RESP, thereby notifying the application program this RECEIVE was satisfied by a response and not by a normal-flow (DFSYN) request. See the *ACF/VTAM Macro Language Guide* for an additional description and possible uses of this option.

The response to a normal-flow request is not queued if *any* of the following fields are set:

- If the SEND macro instruction specifies POST=RESP. The response to this request is posted directly into the RPL fields of the SEND RPL.
- If the SEND macro instruction specifies RESPOND=NQRESP. The response is delivered to the application program before normal-flow (DFSYN) requests and satisfies either a RECEIVE RTYPE=RESP macro instruction or the RESP exit routine.
- If the NIB (specifying the name of the logical unit) specifies PROC=NORDRESP. The response is delivered to the application program before normal-flow (DFSYN) requests and satisfies either a RECEIVE RTYPE=RESP macro instruction or a RESP exit routine.

BLOCK|MSG|TRANS|CONT (Basic mode only)
These control how many blocks of data are to be obtained from a BSC or start-stop terminal for a solicit operation and how acknowledgments are to be handled as each block arrives.

Solicit operations are all operations conducted by ACF/VTAM to transfer data from a terminal to ACF/VTAM buffers. Solicitation does not involve the transfer of data from ACF/VTAM buffers to the application program.

ACF/VTAM solicits data from a terminal when (1) the application program issues a SOLICIT macro instruction or (2) the application program issues a READ macro instruction with the SPEC option code in effect for the RPL. Solicitation is not performed in the latter case, however, if ACF/VTAM already holds data obtained from the terminal.

Before reading the descriptions of BLOCK, MSG, TRANS, and CONT that follow, examine Figure 11. This figure illustrates a typical data transmission from a terminal and shows how much of it is obtained each time a SOLICIT (or READ, as qualified above) is executed.

BLOCK
Either a line control response is sent to acknowledge receipt of the previous solicit operation, or polling is started. One block of data ending in an EOB line-control character (for start-stop devices) or an ETB or ETX line-control character (for BSC devices) is obtained. No response is sent when data is obtained as a result of the *current* solicit request. The data obtained by the current solicit request is acknowledged only when the next solicit request is issued.

If the terminal represented by this NIB is a BSC device, an authorization test is made when an OPNDST macro instruction is issued for this NIB. If the installation did not authorize the use of BLOCK by the application program (by so indicating in the application program's APPL entry during ACF/VTAM definition), the OPNDST macro instruction will not be executed successfully. (The use of BLOCK is restricted this way because it can result in line throughput that is very low compared to MSG, TRANS, and CONT. The low throughput results because the CPU, rather than just the communications controller, must be interrupted for each block.)

MSG
Blocks of data are continuously obtained until an EOT character (for start-stop devices) or a block containing an ETX character (for BSC devices) is received. In effect, this means that data is solicited from the terminal until an entire message has been received. For BSC devices, line-control responses are sent as each block is received, except for the last block. Its receipt is not acknowledged until the next solicit request is issued.

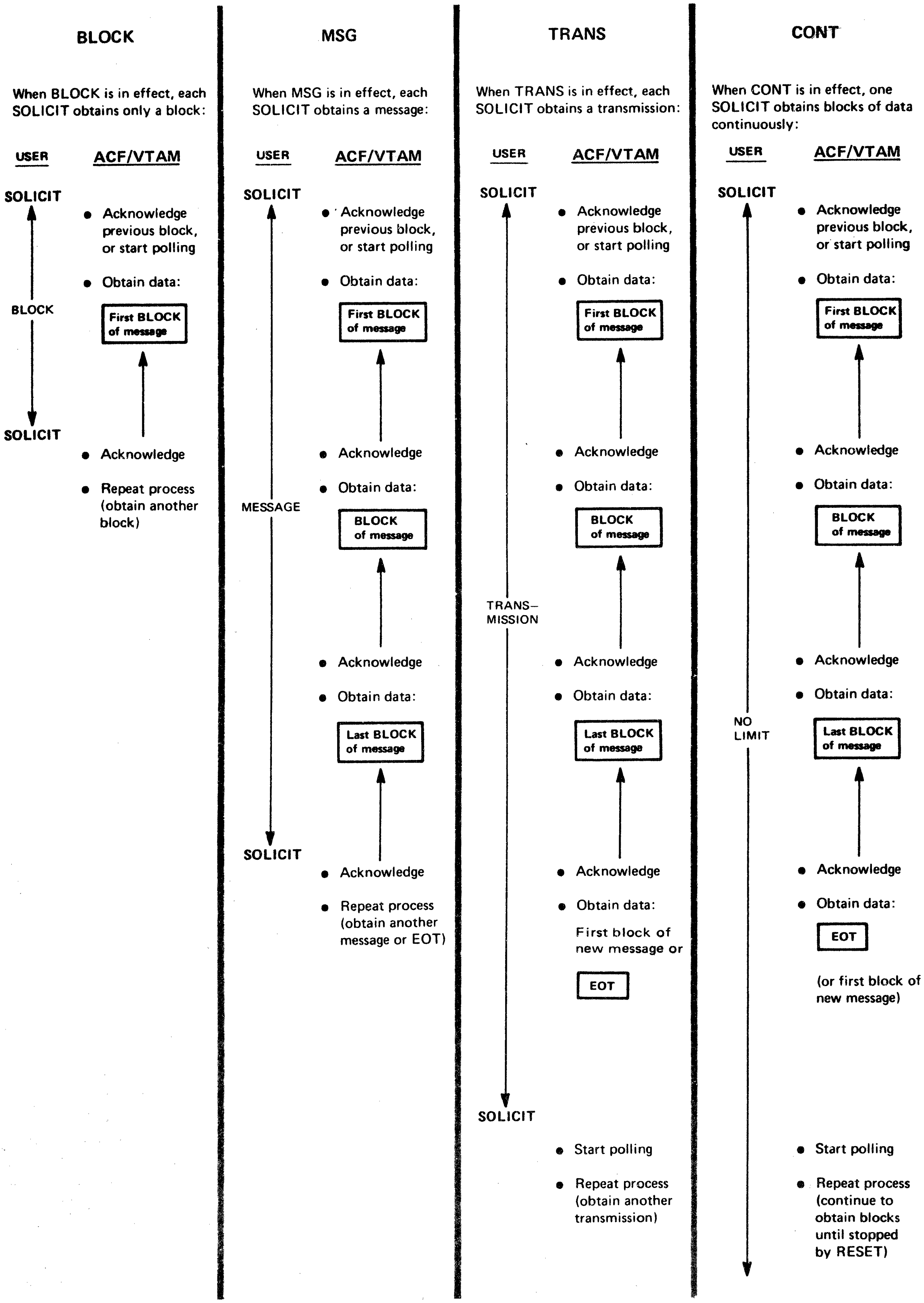

BLOCK
When BLOCK is in effect, each SOLICIT obtains only a block:
USER
ACF/VTAM
SOLICIT
BLOCK
SOLICIT
• Acknowledge previous block, or start polling
• Obtain data:
First BLOCK of message
• Acknowledge
• Repeat process (obtain another block)
MSG
When MSG is in effect, each SOLICIT obtains a message:
USER
ACF/VTAM
SOLICIT
MESSAGE
SOLICIT
• Acknowledge previous block, or start polling
• Obtain data:
First BLOCK of message
• Acknowledge
• Obtain data:
BLOCK of message
• Acknowledge
• Obtain data:
Last BLOCK of message
• Acknowledge
• Repeat process (obtain another message or EOT)
TRANS
When TRANS is in effect, each SOLICIT obtains a transmission:
USER
ACF/VTAM
SOLICIT
TRANS-MISSION
SOLICIT
• Acknowledge previous block, or start polling
• Obtain data:
First BLOCK of message
• Acknowledge
• Obtain data:
BLOCK of message
• Acknowledge
• Obtain data:
Last BLOCK of message
• Acknowledge
• Obtain data:
First block of new message or
EOT
• Start polling
• Repeat process (obtain another transmission)
CONT
When CONT is in effect, one SOLICIT obtains blocks of data continuously:
USER
ACF/VTAM
SOLICIT
NO LIMIT
• Acknowledge previous block, or start polling
• Obtain data:
First BLOCK of message
• Acknowledge
• Obtain data:
BLOCK of message
• Acknowledge
• Obtain data:
Last BLOCK of message
• Acknowledge
• Obtain data:
EOT
(or first block of new message)
• Start polling
• Repeat process (continue to obtain blocks until stopped by RESET)

Figure 11. The Effect of BLOCK, MSG, TRANS, and CONT on Solicitation

For start-stop devices, line-control responses are sent for each block, including the last. The procedure used to solicit data from start-stop devices when the MSG processing option is specified is identical to that used when the TRANS processing option is specified.

TRANS
Blocks of data are continuously obtained until an EOT character is received. In effect, this means that data is solicited from the terminal until an entire transmission has been received. Line-control responses are sent as each block is received, including the last block. Polling is not resumed until the next solicit request is issued.

CONT
Blocks of data are continuously solicited from the terminal. Line-control responses are sent for each block received. This solicitation continues indefinitely, unless the solicit operation is canceled with the RESET macro instruction or the terminal is disconnected from the program.

LGOUT|NLGOUT (Basic mode only)
Indicates whether or not an output operation with this terminal should be considered to be in error if the terminal acknowledges receipt of the data with a response that is preceded by leading graphic characters.

When LGOUT is specified, a code is posted in the FDBK field of the WRITE request's RPL, and the leading graphic characters are held by ACF/VTAM. A READ request directed at the terminal causes the characters to be moved into the application program's storage (in the data area indicated by the AREA field of READ's RPL). If leading graphic characters are received during a conversational write operation, the characters are passed to the application program as the input data.

When NLGOUT is specified, the output operation is completed in error if leading graphic characters are received in return.

LGIN|NLGIN (Basic mode only)
Indicates whether or not an input operation with this terminal should be considered to be in error if leading graphic characters are received.

If LGIN is specified, the presence of leading graphic characters does not constitute an error condition; the application program is notified of their presence by means of a code set in the FDBK field of the input request's RPL.

When NLGIN is specified, the input operation is completed in error if leading graphic characters are detected.

TMFLL|NTMFLL (Basic mode only)
Indicates whether or not the communications controller is to insert idle device control characters into the data sent to this terminal. TMFLL allows the communications controller to insert these characters. NTMFLL suppresses the insertion of these characters, implying that the application program will be supplying its own time-fill characters. Time fill is only performed for start-stop devices, which require special timing considerations following a carriage return and horizontal tab characters. See the INHIBIT=TIMEFILL operand in the *NCP Generation and Utilities Guide.*

NEIB|EIB (Basic mode only)
Indicates whether or not the system is to insert an EIB error information byte (EIB) after every intermediate transmission block (ITB) received from this terminal. EIB indicates that an EIB is to be inserted with each intermediate transfer block; NEIB suppresses the insertion of EIBs.

If you specify insertion of EIBs, you should scan the input data for ITB characters, and analyze the next byte (which will be the EIB) to determine whether an error occurred in the intermediate block. Insertion of EIBs is appropriate when you expect that many ITBs will be required for a data block. If a transmission error occurs and you are not using EIB, you cannot determine in which ITB the error occurred, and so would have to request a retransmission of the entire block.

Note: *The presence of ITB characters in the input data does not depend on the EIB-NEIB processng option; this option only governs the presence of the EIB. The presence of the ITB character is a function of the terminal itself. See the XITB operand in the* NCP Generation and Utilities Guide.

TIMEOUT | NTIMEOUT (Basic mode only)
Indicates whether or not the communications controller should suppress any text timeout limitation that might otherwise be used with this terminal. TIMEOUT permits normal timeouts to occur; NTIMEOUT suppresses them.

When TIMEOUT is in effect, the communications controller imposes a text timeout limitation as indicated by the installation in the terminal's TERMINAL entry. (A timeout limitation means that if the interval between two successive characters sent by a terminal exceeds a set limit, the I/O operation is terminated with an error condition.) NTIMEOUT provides the application program with a means of overriding this limitation and allowing the terminal an indefinite time period between characters. See the INHIBIT=TEXTTO operand in the *NCP Generation and Utilities Guide.*

ERPIN | NERPIN (Basic mode only)
Indicates whether or not system error recovery (retry) procedures are to be used if an I/O error occurs during an *input* operation with this terminal. ERPIN means that the error recovery procedures are to be used; NERPIN means that they are not. See the INHIBIT=ERPR operand in the *NCP Generation and Utilities Guide.*

ERPOUT | NERPOUT (Basic mode only)
Indicates whether or not system error recovery (retry) procedures are to be used if an I/O error occurs during an *output* operation with this terminal. ERPOUT means that the error recovery procedures are to be used; NERPOUT means that they are not. See the INHIBIT=ERPW operand in the *NCP Generation and Utilities Guide.*

NMONITOR | MONITOR (Basic mode only)
Indicates whether or not ACF/VTAM is to invoke the ATTN exit routine (see EXLST macro) when this terminal causes an attention interruption. MONITOR means that the communications controller will monitor the terminal for attention interruptions while the terminal is not engaged in pending or actual I/O operations, and invoke the routine when an interruption is detected.

MONITOR is valid only if the user indicated during ACF/VTAM definition that the communications controller is to react to attention interruptions. If an attention interruption is received *during* an I/O operation, the I/O request ends with the RPL's FDBK2 field posted to indicate why. MONITOR does not apply to attention interruptions issued during an I/O operation.

If NMONITOR is specified, no monitoring occurs (the attention interruption is ignored).

NELC | ELC (Basic mode only)
Indicates whether communication control characters are to be generated for the data sent to this terminal communication. ELC signifies that the application program is embedding its own communication control characters in the data; its use prevents the system from doing so. NELC means that the application program is relying on the system to insert appropriate communication control characters. See Appendix B for a list of the communication control characters that are normally inserted. ELC can only be used if the NBINARY option code is in effect for the RPL. For basic-mode 3270 devices, NELC must be used.

NBINARY | BINARY (Basic mode only)
Indicates how data is to be handled when a WRITE macro instruction is used to write to a BSC device. When BINARY is specified, the data is sent in transparent text mode. This means that each of the communication control characters normally inserted by the communications controller is preceded by a DLE line control sequence. Any bit patterns can thus be sent, including communication control characters and object code. NBINARY means that the data is not sent in transparent text mode. Since the data will be screened for communication control characters, no bit patterns that happen to be communication control characters should be in the output data. (See "Transmission in Transparent Mode" in the *NCP Generation and Utilities Guide* for a description of transparent text mode.)

Example

```
NIB1         NIB        NAME=KBD3270,USERFLD=A(KBDRTN),
                        MODE=BASIC,LISTEND=YES
```

NIB1 could represent the keyboard component of a 3270 whose entry in the resource definition table is labeled KBD3270. When OPNDST is issued to connect this terminal to the program, the NIB field of the OPNDST's RPL must point to NIB1. Since LISTEND=YES is coded, *only* this terminal can be connected with the OPNDST macro. Responses from the logical unit are not queued with other normal requests, and ACF/VTAM responds to all expedited data flow control commands sent from the logical unit.

NIB Fields Set by ACF/VTAM

All of the operands described above are supplied by the application program and cause the NIB fields to be set when the NIB macro instruction is assembled. There are additional NIB fields that cannot be set by the application program, but are set by ACF/VTAM, and they can be examined by the application program during program execution. ACF/VTAM uses these fields to return information to the application program upon completion of OPNDST and OPNSEC processing. These fields are:

Field Name	Content
CID	If the terminal or logical unit named by the NAME field in the NIB is connected, this field contains a 32-bit value representing the session just established. This communication ID, or CID, is also placed in the ARG field of the RPL used by the OPNDST macro instruction. Subsequent I/O requests for the terminal or logical unit must have this CID in the ARG field of the RPL used for the I/O request. When NIB lists are used, the CID placed in the ARG field is not meaningful. The CID can be examined with the SHOWCB and TESTCB macro instructions. (If the terminal or logical unit is not connected, the CID field is not modified.)

Field Name **Content**

CON

An indicator that is set to show that the terminal or logical unit represented by this NIB has been connected. You can examine this field following OPNDST or OPNSEC by coding CON=YES in a TESTCB macro instruction; an "equal" PSW condition code indicates that the CON field is set to YES, and the terminal or logical unit is connected. This field is useful if you are using OPNDST to establish connection with more than one terminal or logical unit. Should connection be established with some of the terminals or logical units and not others, examination of each NIB's CON field will tell you which terminals or logical units are connected. This field must be reset before the NIB can be reused. (If the terminal or logical unit is not connected, the CON field is not modified.)

DEVCHAR

An 8-byte field describing the type of terminal or logical unit that has been connected and what optional features it has. (If the terminal or logical unit is not connected, the DEVCHAR field is not modified.) This field can be examined with either the SHOWCB or TESTCB macro instruction or with the ISTDVCHR DSECT. The DEVCHAR DSECT (ISTDVCHR) is described in Appendix H (Figure H-13).

NIBNACLQ

An indicator that is set to show whether or not a logon is still pending after an OPNDST ACCEPT macro instruction fails to accept that logon. If this bit is on (1), it means that the pending logon was canceled by ACF/VTAM. The logon must be repeated; for example, a terminal operator has to log on again. If the bit is off (0), the logon is still pending, and the application program can retry the OPNDST macro instruction.

Devices Applicable for Each NIB Processing Option

Figure 12 shows, for each device supported by ACF/VTAM, the processing options applicable to that device. An X indicates that the PROC operand value is meaningful for the device.

	BLOCK	MSG	TRANS	CONT	LGIN–NLGIN	LGOUT–NLGOUT	CONFTXT–NCONFTXT	TMFLL–NTMFLL	EIB–NEIB	TIMEOUT–NTIMEOUT	ERPIN–NERPIN	ERPOUT–NERPOUT	MONITOR–NMONITOR	ELC–NELC	TRUNC–KEEP	BINARY–NBINARY	DFASYX–NDFASYX	RESPX–NRESPX	CA–CS–RPLC	SYSRESP–APPLRESP	ORDRESP–NORDRESP
Start–Stop Devices																					
IBM 1050 Data Communication System	X		X	X			X	X		X	X	X	X	X	X				X		
IBM 2740 Communication Terminal, Model 1			X	X			X	X		X				X	X				X		
IBM 2740 Communication Terminal, Model 1 with checking	X		X	X			X	X		X	X	X		X	X				X		
IBM 2740 Communication Terminal, Model 1, with station control			X	X			X	X		X				X	X				X		
IBM 2740 Communication Terminal, Model 1, with checking and station control	X		X	X			X	X		X	X	X		X	X				X		
IBM 2740 Communication Terminal, Model 2			X	X			X				X	X			X				X		
IBM 2741 Communication Terminal			X	X			X	X		X			X	X	X				X		
IBM Communicating Magnetic Card Selectric Typewriter			X	X			X			X			X	X	X				X		
IBM World Trade Telegraph Station			X	X			X							X	X				X		
IBM SYSTEM/7			X	X			X			X				X	X				X		
AT&T 83B3 Selective Calling Station			X	X			X							X	X				X		
CPT-TWX, Models 33 & 35			X	X			X	X		X			X	X	X				X		
Western Union Plan 115A Station			X	X			X							X	X				X		
BSC and 3270 Local Devices																					
IBM 2770 Data Communication System	X	X	X	X			X		X		X	X		X	X	X			X		
IBM 2780 Data Transmission Terminal	X	X	X	X			X		X		X	X		X	X	X			X		
IBM 2972 General Banking Terminal, Models 8 and 11			X	X			X		X		X	X		X	X				X		
IBM 3270 Information Display System, locally attached to controller (channel)			X				X								X				X		
IBM 3270 Information Display System, remotely attached to controller (basic mode)			X				X								X				X		
IBM 3270 Information Display System, locally or remotely attached, treated as an SNA device (record-mode)							X								X		X	X	X	X	X
IBM 3735 Programmable Buffered Terminal	X	X	X	X			X		X	X	X	X		X	X	X			X		
IBM 3740 Data Entry System	X	X	X	X			X		X		X	X		X	X	X			X		
IBM 3780 Data Transmission Terminal	X	X	X	X			X		X		X	X		X	X	X			X		
IBM System/3	X	X	X	X	X	X	X		X		X	X		X	X	X			X		
IBM System/370	X	X	X	X	X	X	X		X		X	X		X	X	X			X		

Figure 12 (Part 1 of 2). Devices Applicable to Each NIB Processing Option

SNA Devices	BLOCK	MSG	TRANS	CONT	LGIN-NLGIN	LGOUT-NLGOUT	CONFTXT-NCONFTXT	TMFLL-NTMFLL	EIB-NEIB	TIMEOUT-NTIMEOUT	ERPIN-NERPIN	ERPOUT-NERPOUT	MONITOR-NMONITOR	ELC-NELC	TRUNC-KEEP	BINARY-NBINARY	DFASYX-NDFASYX	RESPX-NRESPX	CA-CS-RPLC	SYSRESP-APPLRESP	ORDRESP-NORDRESP
IBM 3270 Information Display System							X								X		X	X	X	X	X
IBM 3600 Finance Communications System							X								X		X	X	X	X	X
IBM 3650 Retail Store System *							X								X		X	X	X	X	X
IBM 3660 Supermarket System *							X								X		X	X	X	X	X
IBM 3767 Communication Terminal							X								X		X	X	X	X	X
IBM 3770 Data Communications System							X								X		X	X	X	X	X
IBM 3790 Communication System							X								X		X	X	X	X	X
IBM System/32 Batch Work Station							X								X		X	X	X	X	X

* Not available with OS/VS2 SVS

Figure 12 (Part 2 of 2). Devices Applicable to Each NIB Processing Option

OPEN–Open One or More ACBs

The OPEN macro instruction opens (or "activates") the ACB so that the ACB and all subsequent requests referring to it can be identified by ACF/VTAM as representing a specific application program. The programmer coding the OPEN macro instruction indicates the ACB (or ACBs) that are to be opened.

An ACB represents an application program, as defined by the user. This application program that the ACB represents is neither a primary nor a secondary application program. When the application program later establishes a session with a terminal or logical unit and follows primary protocols, it becomes a primary application program for that session. If the application program establishes a session with another application program and follows secondary protocols, it becomes a secondary application program for that session.

The ACB's APPLID field must contain the address of ACF/VTAM's symbolic name for the application program. (A symbolic name is generated during ACF/VTAM definition from the user-specified symbolic name on an APPL definition statement.) It is during OPEN processing that the association between the ACB and the symbolic name is actually made. Terminals and logical units directing logons to this symbolic name are in effect directing their logons to the associated ACB.

If you do not specify an address of a symbolic name in the ACB's APPLID field, ACF/VTAM assumes that the symbolic name will be identified via JCL. In OS/VS, the name specified on the application program's EXEC statement is used; in DOS/VS, the job name is used. If you fail to indicate a symbolic name through either the APPLID field or by JCL, OPEN will not be completed successfully; and, in DOS/VS, if more than one ACB is opened by a single task, the OPEN will fail if more than one of the ACBs named has no name specified for APPLID. For this reason, the application program should always supply an address of a symbolic name in the APPLID field for DOS/VS.

OPEN (and also CLOSE) must be issued in the mainline program (or in the LERAD or SYNAD exit-routines if they have been entered directly from the main program). Never issue OPEN in the RPL exit-routine or in any of the other exit-routines.

After an ACB is opened, the application program can then issue SENDCMD and RCVCMD macro instructions to display and control the status of the network.

Privileged OS/VS2 MVS programs can issue OPEN macro instructions in any task, but all OPENs must be issued in the same task. In DOS/VS, OS/VS1 and OS/VS2 SVS, programs can issue OPEN macro instructions in more than one task.

If the APPL entry created by the installation contains a password, the ACB being opened must also specify that same password, or OPEN will not be completed successfully.

Opening an ACB with MACRF=LOGON allows a primary application program to have logons queued for it. When SETLOGON (OPTCD=START) is subsequently issued, queued and new logons cause the LOGON exit routine to be scheduled.

Opening an ACB with MACRF=LOGON allows a secondary application program to request connection to a primary application program and to participate in the connection processing. When SETLOGON (OPTCD=START) is subsequently issued, a connection request (REQSESS) can be issued and the secondary application program's SCIP exit routine is enabled to receive session parameters.

Name	*Operation*	*Operands*
[symbol]	**OPEN**	**acb address[, acb address]...**
This form of OPEN is valid in DOS/VS only.		
[symbol]	**OPEN**	**(acb address[,,acb address]...)**
This form of OPEN is valid in OS/VS only.		

acb address

Indicates the ACB that is to be associated with an APPL entry.

Format: If more than one ACB is specified, separate each with a comma if the program is going to be run under DOS/VS. Separate each ACB address with *two* commas if the program is going to be run under OS/VS. (The same assembler handles both ACF/VTAM and non-ACF/VTAM macro instructions. An extra operand can be supplied with each address for the latter, and so an extra comma is required for the ACF/VTAM OPEN.)

Note: *VSAM ACB addresses can also be used in the OPEN macro instruction. DOS/VS users can also code DTF addresses, and OS/VS users can also code DCB addresses. The addresses of different types of control blocks can be combined in one OPEN macro instruction, although DOS/VS users are limited to a total of 15 addresses.*

Example

```
OPEN123     OPEN        (ACB1,ACB2,7) (DOS/VS)

OPEN123     OPEN        (ACB,,ACB2,,(7))(OS/VS)
```

OPEN123 opens ACB1, ACB2, and the ACB whose address is contained in register 7. Each of these ACBs is linked with an APPL entry in the resource definition table.

Return of Status Information

When control is returned to the instruction following the OPEN macro instruction, register 15 indicates whether or not the OPEN processing was completed successfully. Successful completion means that *all* ACBs specified in the OPEN macro instruction were opened; unsuccessful completion means that at least one ACB was not opened. Successful completion is indicated by a return code of 0 in register 15. For DOS/VS users, register 15 is unmodified if the OPEN is completed successfully and so should be set to 0 before OPEN is executed. Unsuccessful completion is indicated by the following register 15 values:

Register 15 Return Code For DOS/VS	**Meaning**
Nonzero	One or more ACBs (or DTFs or VSAM ACBs) were not successfully opened.

For OS/VS	**Meaning**
4	All ACBs (or DCBs) were successfully opened, but warning messages were issued for one or more VSAM ACBs.

For OS/VS	Meaning
8	One or more ACBs (or DCBs) were not successfully opened. If the error condition indicated by the unopened ACB's ERROR field can be eliminated, another OPEN macro instruction can be issued for the unopened ACBs.
12	One or more ACBs (or DCBs) were not successfully opened. Another OPEN macro instruction cannot be issued for the unopened ACBs.

If unsuccessful completion is indicated, the application program should examine the OFLAGS field in each ACB to determine which one (or ones) could not be opened. Test each OFLAGS field by coding an ACB address and OFLAGS=OPEN in a TESTCB macro instruction; if the resulting PSW condition code indicates an equal comparison, that ACB has been opened:

```
TESTCB        ACB=ACB4,OFLAGS=OPEN
BE            OPENOK
```

If an unequal comparison is indicated, meaning that the ACB has not been opened, another field in that ACB can be checked to determine the reason. This field is the ERROR field. Like OFLAGS, ERROR is not a field that the application program should modify (that is, there is no ERROR operand for the ACB macro, and thus none for the MODCB macro), but the application program can obtain the contents of this field with the SHOWCB or TESTCB macro instruction. For example:

```
SHOWCB        ACB=ACB1,FIELDS=ERROR,AREA=SHOWIT,LENGTH=4,AM=VTAM
```

Note: *If the ACB is already open, or if the address specified in the OPEN macro instruction either does not indicate an ACB or lies beyond the addressable range of your application program,* nothing *is posted in the ACB's ERROR field. Thus if you find one of the following return codes in the ACB's ERROR field and none of the specified causes apply, perhaps you are actually examining a field whose contents have not been modified by OPEN. An already-open ACB or an invalid ACB address will result in register 15's being set to a non-zero value, however.*

For the values that can be set in the ERROR field of an ACB, see Appendix C. Since most of the error conditions described in Appendix C result from an error in your application program or in the installation's definition of ACF/VTAM, there is little that can be done during program execution when these return codes are encountered. If, however, you are attempting to open more than one ACB, you may wish to check the ERROR field of each ACB. All ACBs whose ERROR fields are set to zero have been opened successfully, and your application program can proceed using those ACBs.

Although the return codes following a DOS/VS OPEN are not identical to those following an OS/VS OPEN, the following procedure can be used to produce a system-independent determination of a successful or unsuccessful OPEN:

- Zero register 15 before issuing OPEN.
- Issue OPEN for only one ACF/VTAM ACB at a time.
- If register 15 is zero, consider the OPEN successful.
- If register 15 is nonzero, consider the OPEN unsuccessful. Examine the contents of the ACB's ERROR field.

OPNDST—Establish Connection with Terminals or Logical Units

The OPNDST (open destination) macro instruction requests ACF/VTAM to establish a connection (session) between the application program which will act as the primary end of the session and one or more terminals or logical units. While an OPNDST must always be used to establish a connection, there are two fundamentally different ways an OPNDST can be used to request that connection.

Acquiring a Terminal or Logical Unit

An application program can request that a terminal or logical unit be connected to it. This process is called *acquiring* a terminal or logical unit. Such a request is satisfied if the terminal or logical unit is available; that is, is not connected to another application program and does not have a pending logon. This type of request is implemented by setting the ACQUIRE option code in the RPL used by OPNDST. The use of ACQUIRE must be authorized by the user.

If a BSC or start-stop terminal has been defined as dial-out by the user, the connection request is completed immediately if the terminal is available, but the terminal is dialed only when an I/O request is issued for the terminal. If a logical unit has been defined as dial out, it is dialed when OPNDST is issued for it.

Accepting a Terminal or Logical Unit

In the second way of using OPNDST, the application can request that a terminal or logical unit be connected to it only if the terminal or logical unit requests connection with that application program or if a connection request is made on its behalf. This process is called *accepting* a terminal or logical unit.

This type of connection request can be embedded in a LOGON exit routine (see the EXLST macro) that is automatically entered when a terminal or logical unit logs on. This arrangement means that logon requests can, in effect, invoke the type of OPNDST which will complete the connection.

This type of request is implemented by setting the ACCEPT option code in the RPL.

Note: *When a terminal or logical unit logs on, ACF/VTAM first checks for a matching outstanding OPNDST requests (that is, OPNDSTs with ACCEPT and Q that have not yet been completed because no logon has been made by the terminal operator). If there are no outstanding OPNDST requests, ACF/VTAM checks for a LOGON exit routine and schedules it if it is active. Thus a logon will not cause a LOGON exit routine to be scheduled if there is a pending OPNDST with OPTCD=ACCEPT. If no LOGON exit routine exists, the logon is queued. See the* Macro Language Guide *for more information.*

There are three versions of OPNDST with OPTCD=ACQUIRE. These versions are specified with two RPL option codes, CONALL and CONANY, and the LISTEND field of the NIB, which govern whether multiple terminals or logical units, only one, or one specific terminal or logical unit is to be connected. OPNDST with ACCEPT likewise has two versions, specified with two more RPL option codes, SPEC and ANY. These govern whether a specific terminal or logical unit or any eligible terminal or logical unit is to be connected. There are therefore a total of five general types of OPNDST. The following five sections indicate how you must prepare for each and what happens when the connection occurs.

OPNDST with ACQUIRE, CONALL, and a NIB List: Set the RPL's NIB field to point to a *list* of NIBs (described in the LISTEND operand of the NIB macro instruction), and set the ACQUIRE and CONALL option codes in the RPL.

When OPNDST is issued, ACF/VTAM connects the program to *all* of the terminals and logical units represented in the NIB list that are available when OPNDST is executed. ACF/VTAM also:

- Generates a CID for each connected terminal or logical unit. Each CID is placed in its respective NIB in the CID field, where it can be obtained with the SHOWCB macro instruction when it is needed. The CID is not placed in the RPL's ARG field. (In the other forms of OPNDST, the CID is placed in the NIB *and* in the RPL.)
- Sets a flag in each NIB indicating that the terminal or logical unit is connected. This flag can be tested by specifying CON=YES in a TESTCB macro instruction.
- Places the address of the first NIB of the NIB list in the AREA field of the RPL. (This is the same address you supplied in the RPL's NIB field; it is returned to you because the contents of the NIB field are modified by ACF/VTAM during connection.)

OPNDST with ACQUIRE, CONANY, and a NIB List: Set the RPL's NIB field to point to a *list* of NIBs, and set the ACQUIRE and CONANY option codes in the RPL.

When OPNDST is issued, ACF/VTAM connects the program to the *first* (and only to the first) available terminal or logical unit (regardless of type) represented in the NIB list. If none is available, ACF/VTAM terminates the OPNDST request. A terminal or logical unit is available if it is not connected to any application program and does not have a pending logon. ACF/VTAM also:

- Generates a CID for the connected terminal or logical unit and places it in the ARG field of the RPL and in the CID field of the NIB.
- Sets a flag in the NIB that represents the connected terminal or logical unit. The application program can locate this NIB by issuing a TESTCB macro instruction with the CON=YES operand for each NIB. An "equal" PSW condition code is set following the TESTCB macro instruction if the NIB being tested represents the connected terminal or logical unit.
- Places the address of the first NIB of the NIB list in the AREA field of the RPL. This is the same address you supplied in the RPL's NIB field; it is returned to you because the contents of the NIB field are modified by ACF/VTAM during connection.

OPNDST with ACQUIRE and One NIB: Set the RPL's NIB field to point to *one* NIB (LISTEND field set to YES). ACF/VTAM connects the terminal or logical unit whose symbolic name is in the NIB to the application program. ACF/VTAM completes the request immediately; if the terminal or logical unit is not immediately available, it is not connected. ACF/VTAM also:

- Generates a CID for the connected terminal or logical unit and places it in the ARG field of the RPL and in the CID field of the NIB.
- Sets a flag in the NIB indicating that the terminal or logical unit is connected.
- Places the address of the NIB in the AREA field of the RPL.

OPNDST with ACCEPT and ANY: Set the RPL's OPTCD field to ACCEPT and ANY, and set the NIB field to point to a NIB. This NIB need not have any symbolic name in it, but it must at least have the MODE field set to RECORD or BASIC and the LISTEND field set to YES.

When OPNDST is issued, ACF/VTAM attempts to connect the program to any terminal or logical unit that has directed a logon to the program. ACF/VTAM also:

- Places the symbolic name of the connected terminal or logical unit into the NAME field of the NIB.

- Generates a CID for the connected terminal or logical unit and places it in the CID field of that NIB and in the ARG field of the RPL.
- Places the address of the NIB in the RPL's AREA field.

Note: *In a network that contains SNA and non-SNA terminals, the mode set in the NIB may not apply to the terminal or logical unit that logs on (for example, the MODE operand is set to BASIC and a logical unit is the first to log on). Therefore, it is advisable to use a LOGON exit routine and OPNDST with ACCEPT and SPEC in this situation.*

OPNDST with ACCEPT and SPEC: Set the RPL's OPTCD field to ACCEPT and SPEC, and set the NIB field to point to a NIB. The NAME have its LISTEND field of this NIB must identify the terminal or logicahave its LISTEND field set to YES.

When OPNDST is issued, the result will be this: ACF/VTAM connects the program to the specific terminal or logical unit represented in the NIB if (or when) that terminal or logical unit has directed a logon to the program. ACF/VTAM also:

- Generates a CID for the connected terminal or logical unit and places it in the CID field of the NIB and in the ARG field of the RPL.
- Places the address of the NIB in the RPL's AREA field.

If the OPNDST fails, the NIB is set to indicate whether the logon is still pending or another logon must be generated to establish the connection.

Besides the SPEC-ANY option code, other RPL and NIB options and fields affect how the OPNDST request is handled. Generally, their effect is the same as it is for other macro instructions that point to an RPL; see Figure 16 in the RPL macro instruction description for a list of these codes and fields.

Name	*Operation*	*Operands*
[symbol]	**OPNDST**	**RPL=rpl address** **[,rpl field name=new value] . . .**

RPL=rpl address

Indicates the location of the RPL to be used during OPNDST processing.

rpl field name=new value

Indicates an RPL field to be modified and the new value that is to be contained within it. If you wish to avoid the possibility of program reassembly following future releases of ACF/VTAM, set the RPL field with MODCB macro instructions rather than with the OPNDST macro instruction.

Format: For *rpl field name,* code the keyword of the RPL macro instruction operand that corresponds to the RPL field to be modified. The *new value* can be any value that is valid for that operand in the RPL macro instruction, or it can indicate a register.

The following RPL operands apply to an OPNDST macro instruction:

ACB=acb address

Indicates the ACB that identifies the application program to which the terminal or logical unit is to be connected.

NIB=nib address
Indicates the NIB whose PROC, MODE, and USERFLD attributes are to be assigned to the connected terminal or logical unit. The LOGMODE and, optionally, the BNDAREA field of the NIB specify the session parameters to be used (by ACF/VTAM) in creating an SNA Bind command. If OPTCD=ACQUIRE or OPTCD=SPEC, the NIB also identifies (via its NAME field) the terminal or logical unit to be connected.

ECB=ecb address
ECB=<u>INTERNAL</u>
EXIT=rpl exit routine address
Indicates the action to be taken by ACF/VTAM when an asynchronous (OPTCD=ASY) OPNDST macro instruction is completed. The macro instruction is completed when the connections between the application program and the terminals specified are established. If EXIT is specified, the RPL exit routine is scheduled. Otherwise the ECB is posted, and CHECK or WAIT must be used to determine when the posting occurs.

If ECB=INTERNAL is specified and *synchronous* handling (SYN option) is used, ACF/VTAM uses the ECB-EXIT field in the RPL as an *internal* ECB and clears it. If *asynchronous* handling (ASY option) is used, ACF/VTAM will also use the ECB-EXIT field in the RPL as an internal ECB, but the user must issue a CHECK macro instruction to check and clear it. If neither the ECB nor EXIT keywords are specified, ACF/VTAM treats the field as if ECB=INTERNAL had been specified. See the RPL macro instruction for more information.

OPTCD=SYN | ASY
When the SYN option code is set, control is returned to the application program when the macro instruction has been completed. When ASY is set, control is returned as soon as ACF/VTAM has accepted the request. Once one or more connections have been established (that is, once the macro instruction has been completed), the ECB is posted or the RPL exit routine is scheduled, as indicated by the ECB-EXIT field.

OPTCD=ACQUIRE | ACCEPT
When ACQUIRE is set, ACF/VTAM connects the terminals or logical units indicated via the RPL's NIB field. Only those available are connected. When ACCEPT is set, a terminal or logical unit for which there is a logon for the application program is connected.

OPTCD=CONANY | CONALL
When CONANY is set and OPNDST (OPTCD=ACQUIRE) is issued, connection is made to the first available terminal or logical unit of the NIB list indicated in the RPL's NIB field. When CONALL is set, connection is made to *all* the available terminals or logical units in the list.

OPTCD=SPEC | ANY
When SPEC is set, the terminal or logical unit identified by the NIB's NAME field is connected if and when it directs a logon to the application program. When ANY is set, *any* terminal or logical unit that has issued a logon for the application program is connected.

OPTCD=CS | CA
Specifies the initial setting of the connected terminals' or logical units' CS-CA mode for all data types (DFSYN, DFASY, and RESP). When CA is set, data obtained from a terminal or logical unit can satisfy a READ or RECEIVE (OPTCD=ANY or SPEC) macro instruction. When CS is set, only READ or RECEIVE (OPTCD=SPEC) macro instructions can obtain data.

OPTCD=Q|NQ
When Q is set, ACF/VTAM connects the terminal or logical unit when it becomes available, no matter how long that might take. When NQ is set, ACF/VTAM terminates the OPNDST macro instruction immediately if the terminal or logical unit is not immediately available. This option applies only when OPTCD=ACCEPT is in effect; when OPTCD=ACQUIRE is in effect, this option is ignored.

Examples

Note: *To avoid obscuring the differences between the basic types of OPNDST, the same technique is used to set the RPL fields in each example (namely, inserting RPL-modifiers on the OPNDST macro instruction). RPL fields could just as well have been set with the MODCB macro instruction, with assembler instructions, or with the RPL macro instruction itself.*

This is an "ACQUIRE CONALL" OPNDST

```
ACQALL    OPNDST    RPL=RPL1,NIB=NIBLST1,ACB=ACB1,
                    OPTCD=(ACQUIRE,CONALL)
          .
          .
          .
NIBLST1   NIB       NAME=TERM1,MODE=BASIC,LISTEND=NO
          NIB       NAME=TERM2,MODE=BASIC,LISTEND=NO
          NIB       NAME=TERM3,MODE=BASIC,LISTEND=YES
```

ACQALL connects all of the available terminals of NIBLST1 (TERM1, TERM2, and TERM3) to the application program represented by ACB1.

This is an "ACQUIRE CONANY" OPNDST

```
ACQANY    OPNDST    RPL=RPL2,NIB=NIBLST2,ACB=ACB1,
                    OPTCD=(ACQUIRE,CONANY)
          .
          .
          .
NIBLST2   NIB       NAME=LUX,MODE=RECORD,LISTEND=NO
          NIB       NAME=LUY,MODE=RECORD,LISTEND=NO
          NIB       NAME=LUZ,MODE=RECORD,LISTEND=YES
```

ACQANY connects *one* of the logical units of NIBLST2 (LUX, LUY, or LUZ) to the application program. The CON and CID fields are set in the NIB containing the name of the connected logical unit. RPL's ARG field also contains the CID of the connected logical unit.

This is an "ACQUIRE One NIB" OPNDST

```
ACQONE    OPNDST    RPL=RPL3,NIB=NIB3,ACB=ACB1,
                    OPTCD=ACQUIRE
          .
          .
          .
NIB3      NIB       NAME=TERM35,MODE=BASIC
```

ACQONE connects TERM35 to the application program if TERM35 is available.

This is an "ACCEPT ANY" OPNDST

```
ACPTANY    OPNDST    RPL=RPL4,NIB=NIB6,ACB=ACB1,
                     OPTCD=(ACCEPT,ANY,NQ)
           .
           .
           .
NIB6       NIB       MODE=RECORD
```

ACPTANY connects any one logical unit that has issued a logon to the application program. The symbolic name of this logical unit (along with its CID) is placed in NIB6. Since NQ is specified, the request will be terminated if no logical unit has issued a logon.

This is an "ACCEPT SPEC" OPNDST

```
ACPTSPC    OPNDST    RPL=RPL5,NIB=NIB7,ACB=ACB1,
                     OPTCD=(ACCEPT,SPEC,Q)
           .
           .
           .
NIB7       NIB       NAME=LU77,MODE=RECORD
```

ACPTSPC connects LU77 to the application program when a logon is queued from the logical unit to the application program.

Return of Status Information

After the OPNDST operation is completed, the following NIB fields are set:

The connected terminal's CID is placed in the CID field.

The CON field is set to YES if the terminal or logical unit was in fact connected; otherwise this field is not modified. If it is set, the CON field must be reset before the NIB can be reused. This field can be examined by coding CON=YES on a TESTCB macro instruction.

If the ACCEPT and ANY options were in effect, the symbolic name of the connected terminal or logical unit is placed in the NAME field.

The characteristics of a connected terminal are indicated in the DEVCHAR field. The DEVCHAR codes are explained in Appendix H.

An indicator (NIBNACLQ) is set indicating whether the logon is still pending or was canceled by ACF/VTAM.

The following fields are set in the RPL:

If one (and only one) terminal or logical unit has been connected, the CID is placed in the ARG field.

An indicator showing whether the logon is still pending or was canceled by ACF/VTAM.

The address of the NIB or NIB list (as supplied by you in the NIB field) is returned in the AREA field. The NIB field is overlaid when the CID is placed in the ARG field, since the NIB and ARG fields occupy the same physical location in the RPL.

The value 23 (decimal) is set in the REQ field, indicating an OPNDST request.

The RTNCD and FDBK2 fields are set as indicated in Appendix C. If the return codes indicate that the OPNDST has failed, do not issue a CLSDST for the terminal or logical unit.

The SSENSEI, SSENSMI, and USENSEI fields are set if RTNCD=16 and FDBK2=1 are set in the RPL (OPNDST for a logical unit failed).

Registers 0 and 15 are also set as indicated in Appendix C. (Note that the USERFLD field is not set for OPNDST.)

OPNSEC—Accept the Session Parameters from an Application Program (Record Mode Only)

The OPNSEC macro instruction is used by an application program to accept the session parameters that were directed to it by another application program and by doing so, establish a session with that application program. If an application program approves of the session parameters it receives in its SCIP exit routine, the application program issues an OPNSEC macro instruction. By issuing the OPNSEC, a session is established by ACF/VTAM between the application program that sent the session parameters (which becomes the primary end of the session) and the application program that issued the OPNSEC (which becomes the secondary end of the session).

Name	*Operation*	*Operands*
[symbol]	OPNSEC	RPL=rpl address [, rpl field name=new value] . . .

RPL=rpl address
Indicates the location of the RPL to be used during OPNSEC processing.

rpl field name=new value
Indicates an RPL field to be modified and the new value that is to be contained within it. If you wish to avoid the possibility of program reassembly following future releases of ACF/VTAM, set the RPL field with MODCB macro instructions rather than with the OPNSEC macro instruction.

Format: For *rpl field name,* code the keyword of the RPL macro instruction operand that corresponds to the RPL field to be modified. The *new value* can be any value that is valid for that operand in the RPL macro instruction, or it can indicate a register.

The following RPL operands apply to the OPNSEC macro instruction:

ACB=acb address
Indicates the ACB that identifies the application program that is issuing the OPNSEC macro instruction. This ACB must be the same ACB associated with the SCIP exit routine that was scheduled when the Bind command was received.

NIB=nib address
Indicates the NIB whose NAME, MODE, and USERFLD field are associated with the primary application program. The SDT field specifies whether ACF/VTAM (SYSTEM) or the secondary application program (APPL) will respond to SDT commands.

ECB=ecb address
ECB=INTERNAL
EXIT=exit routine address
Indicates the action to be taken when an *asynchronous* (OPTCD=ASY) OPNSEC macro instruction is completed. If EXIT is specified, the RPL exit routine is scheduled when the macro instruction is completed. Otherwise, the ECB is posted, and CHECK or WAIT must be used to determine when the posting occurs.

If ECB=INTERNAL is specified and *synchronous* handling (OPTCD=SYN) is used, ACF/VTAM uses the ECB-EXIT field in the RPL as an *internal* ECB and clears it. If *asynchronous* handling (OPTCD=ASY) is used, ACF/VTAM will also use the ECB-EXIT field as an internal ECB, but the user must issue a CHECK macro instruction to check and clear it. If neither ECB nor EXIT is specified, ACF/VTAM treats the field as if ECB=INTERNAL had been specified. See the RPL macro instruction for more information.

OPTCD=SYN|ASY
When the SYN option code is set, control is returned to the application program when the OPNSEC macro instruction has been completed. When ASY is set, control is returned as soon as ACF/VTAM has accepted the request. When the macro instruction has been completed, the ECB is posted or the RPL exit routine is scheduled, as indicated by the ECB-EXIT field.

OPTCD=CA|CS
Specifies the initial CA-CS setting of all input types (DFSYN, DFASY, and RESP) for the session. When CA is set, data received will satisfy a RECEIVE with OPTCD=ANY or SPEC. When CS is set, data received will only satisfy a RECEIVE with OPTCD=SPEC.

Examples

```
OPNS1       OPNSEC      RPL=RPL1,OPTCD=CA,NIB=NIB1
            .
            .
            .
RPL1        RPL         AM=VTAM
NIB1        NIB         NAME=APPLPRI
```

Executing OPNS1 signifies acceptance of the session parameters received as a result of a Bind command and agreement to act as the secondary end of the session with APPLPRI.

Return of Status Information

After the OPNSEC macro instruction is completed, the following RPL fields are set:

The value 42 (decimal) is set in the REQ field, indicating an OPNSEC request.

The address of the NIB that was specified in the NIB field is returned in the AREA field. The CID is placed in the NIB-ARG field. (The NIB field is overlaid by the ARG field that contains the CID. The NIB and the ARG fields occupy the same space in the RPL.) The RTNCD and FDBK2 fields are set as indicated in Appendix C.

Registers 0 and 15 are also set as indicated in Appendix C.

After the OPNSEC macro instruction is completed, the following fields in the NIB are set:

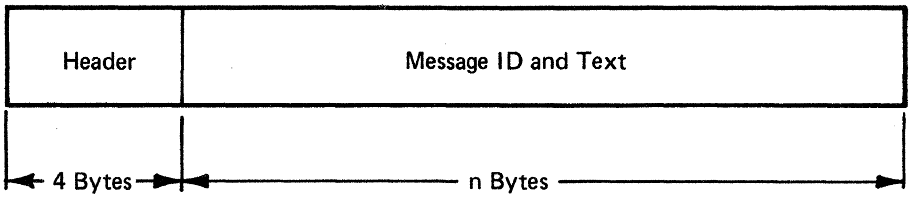
The CID field contains the CID.

The CON field is set to YES if the connection is completed; otherwise, it is not changed.

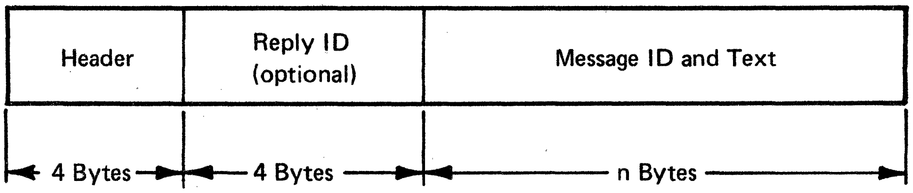
RCVCMD–Receive a Message from ACF/VTAM

After an application program issues a network operator command (VARY, DISPLAY, MODIFY, and REPLY) using a SENDCMD macro instruction, a RCVCMD macro instruction is used to receive the requested information. In addition, unsolicited ACF/VTAM messages such as those indicating an unexpected failure in the network can be received with this macro instruction.

The RCVCMD macro instruction points to an RPL whose AREA field points to the location in the application program that is to receive the message. Every message received from ACF/VTAM consists of a header followed by the message ID (ISTxxxx for OS/VS or 5xxxx for DOS/VS) and the text. The general format of the header and message is:



If a message requires a reply, an additional reply ID is inserted between the header and the message ID. A REPLY command can then be returned to ACF/VTAM using the SENDCMD macro instruction (see the description of the SENDCMD macro instruction for more information). The general form of the header, reply ID, and message is:



For information on using the data area and writing an application program that can issue network operator commands and receive ACF/VTAM messages, see the publication, *ACF/VTAM Program Operator Guide,* SC38-0257.

The use of the RCVCMD macro instruction must be authorized when the application program is defined to ACF/VTAM. There are two levels of authorization available, primary and secondary. An application program that is designated as a primary program may receive responses to ACF/VTAM network operator commands issued using SENDCMD and unsolicited ACF/VTAM messages. An application program designated as a secondary program can receive only responses to network operator commands that it issued. If a primary program is not active, unsolicited ACF/VTAM messages are sent to the system console.

Name	*Operation*	*Operands*
[symbol]	RCVCMD	RPL=rpl address [,rpl field name=new value] . . .

RPL=rpl address

Indicates the location of the RPL that describes the RCVCMD operation.

rpl field name=new value

Indicates an RPL field name to be modified and the new value that is to be contained or represented within it. To avoid the possibility of program reassembly following future releases of ACF/VTAM, set the RPL field with MODCB macro instructions rather than with the RCVCMD macro instruction.

Format: For *rpl field name,* code the keyword of the RPL macro instruction operand that corresponds to the RPL field being modified. The *new value* can be any value that is valid for that operand in the RPL macro instruction.

The following RPL operands apply to the RCVCMD macro instruction:

ACB=acb address
Indicates the ACB that identifies the application program.

AREA=message address
Must contain the address of the area in the application program where the incoming header, optional message identification, and the message text are to be placed. After the message has been moved to this area, the RPL's RECLEN field is set by ACF/VTAM with the total number of bytes of received data. The AREA field is ignored if AREALEN=0.

AREALEN=length of message area
Contains the length (in bytes) of the message area pointed to by AREA. The length specified should be 8 bytes longer than the longest message anticipated to provide enough space for the message header and optional reply ID. The AREA field should be no less than 4 bytes and no longer than 130 bytes.

ECB=ecb address
ECB=<u>INTERNAL</u>
EXIT=rpl exit routine address
Indicates the action to be taken by ACF/VTAM when an asynchronous (OPTCD=ASY) RCVCMD operation is completed. The RCVCMD request is completed when the message or reply has been received, the data (if any) has been placed in the input area, and the appropriate information has been set in the RPL. If NQ is specified and no input is available, RCVCMD is completed immediately. If EXIT is specified, the RPL exit routine is scheduled. Otherwise, the ECB is posted and CHECK or WAIT must be used to determine when posting occurs.

If ECB=INTERNAL is specified and *synchronous* handling (SYN option) is used, ACF/VTAM uses the ECB-EXIT field in the RPL as an *internal* ECB and clears it. If *asynchronous* handling (ASY option) is used, ACF/VTAM will also use the ECB-EXIT field in the RPL as an internal ECB, but the user must issue a CHECK macro instruction to check and clear it. If neither the ECB nor EXIT keywords are specified, ACF/VTAM treats the field as if ECB=INTERNAL had been specified. See the RPL macro instruction for more information.

OPTCD=<u>SYN</u>|ASY
SYN specifies that control is returned to the application program when the RCVCMD operation is completed. ASY specifies that control is returned as soon as ACF/VTAM has accepted the RCVCMD request; once the operation has been completed, the ECB is posted or the RPL exit routine is scheduled as indicated by the ECB-EXIT field. See the RPL macro instruction for more information.

OPTCD=Q|NQ
Indicates the action to be taken if no input is available when the RCVCMD macro instruction is executed. OPTCD=Q means that the macro instruction is to be completed when the requested input eventually arrives. OPTCD=NQ means that the macro instruction is to be completed immediately with RTNCD=0 and FDBK2=6 if the input is not available.

OPTCD=TRUNC
Indicates that overlength input data is truncated whenever the RCVCMD macro instruction is issued. It is advisable to specify this option since overlength data is always truncated.

Note: *After a CLOSE macro instruction has been issued and messages are still queued for the application program, RCVCMD macro instructions may still be issued but they will not be queued. Therefore, these RCVCMD macro instructions must be issued with OPTCD=NQ. After the last message has been received, the return code for RCVCMD (RTNCD=0 and FDBK2=6) will indicate that no more messages are queued.*

Example

```
RCVCMD1    RCVCMD    RPL=RPL1,AREA=MSGBUF,AREALEN=126,OPTCD=(TRUNC,Q)
```

RCVCMD1 is completed when an incoming message is received from ACF/VTAM. After RCVCMD1 is completed, the application program can examine the contents of MSGBUF to determine the message received. Any messages that exceed 126 bytes are truncated to 126 bytes.

Return of Status Information

After the RCVCMD operation is completed, the following RPL fields may be set by ACF/VTAM:

> The RECLEN field indicates the length of the message placed in the input area pointed to by the AREA field. The length specified includes 4 bytes for the header and 4 additional bytes (if required) for the reply identifier. The reply-requested bits in the status field of the header can be tested to determine if this field is present.
>
> The value 40 (decimal) is set in the REQ field, indicating a RCVCMD request.
>
> The RTNCD and FDBK2 fields are set as indicated in Appendix C.

Registers 0 and 15 are also set as indicated in Appendix C.

READ–Read Data into Program Storage (Basic Mode Only)

The READ macro instruction obtains data from ACF/VTAM buffers and moves it into a designated area in program storage. It may or may not cause physical I/O to be performed. If OPTCD=ANY is in effect, the READ operation involves no I/O operation, but simply moves data already obtained from a terminal into program storage.

If READ is being used to obtain data from a specific BSC or start-stop terminal which means that the SPEC option code is in effect in the RPL–and no data from that terminal is available, READ first causes data to be solicited. This implied solicit operation works in the same manner as the solicit operation explained in the SOLICIT macro instruction description. (For 3270 terminals, this use of READ applies only for the first READ; the data for subsequent read operations is unsolicited.)

As soon as ACF/VTAM has moved the data into program storage, it sets the RPL's RECLEN field to indicate how many bytes of data were moved.

If the return code posted in register 15 indicates that the read operation was completed successfully, the application program should check the RPL's FDBK field to determine whether the data received represents the end of a message or transmission. (The read operation may obtain a block of data ending with an end-of-transmission indicator, or the indicator may come separately with the next read operation. In the latter case, the RECLEN field is set to 0 when the next read operation is completed.)

The user of the READ macro instruction codes the address of the RPL that will govern the read operation. Various fields in the RPL determine from which terminal the data is to be obtained, the location of the area in the program where the data is to be placed, and other information regarding how the read request is to be handled. The RPL fields can be modified with the READ macro instruction itself. The operands used to set these fields are indicated below.

The TRUNC-KEEP option determines how excess data is to be handled. When TRUNC is in effect and there is too much incoming data to fit in the input area, the data is truncated and the excess is lost. If KEEP is in effect instead, and there is too much data, the excess is held for the time being and moved into the storage area when the next READ is issued. Flags set in the RPL's FDBK field (explained in Appendix C) indicate when the last of the excess data has been read.

Name	*Operation*	*Operands*
[symbol]	**READ**	**RPL=rpl address** **[,rpl field name=new value] . . .**

RPL=rpl address
Indicates the location of the RPL that governs the read operation.

rpl field name=new value
Indicates an RPL field to be modified and the new value that is to be contained or represented within it. If you wish to avoid the possibility of program reassembly following future releases of ACF/VTAM, set the RPL field with MODCB macro instructions rather than with the READ macro instruction.

Format: For *rpl field name,* code the keyword of the RPL macro instruction operand that corresponds to the RPL field being modified. ARG can also be coded. The *new value* can be any value that is valid for that operand in the RPL macro instruction, or it can indicate a register. The value supplied for the ARG keyword must indicate a register.

The following RPL operands apply to a READ macro instruction:

ACB=acb address
Indicates the ACB that identifies the application program.

ARG=(register)
If data is to be read from a specific terminal, the ARG field of the RPL must contain the CID of the session with that terminal. Register notation is required if the CID is to be placed in the ARG field with this READ macro instruction.

If data is to be read from *any* terminal, the ARG field's content when the macro is issued is irrelevant. After the data has been read, ACF/VTAM obtains the CID of the session with the terminal from which the data originated and places it in the ARG field.

AREA=input data area address
The AREA field must contain the address of the area in the program where the data is to be placed. Once the data has been moved, the RPL's RECLEN field is posted by ACF/VTAM with the number of bytes that were placed there.

AREALEN=length of input data area
The AREALEN field must contain the length (in bytes) of the data area pointed to by AREA. This value is used by ACF/VTAM to determine whether there is too much incoming data to fit. If there is too much, the action indicated by the TRUNC-KEEP processing option is taken.

ECB=ecb address
ECB=INTERNAL
EXIT=rpl exit routine address
Indicates the action to be taken by ACF/VTAM when an asynchronous (OPTCD=ASY) READ macro instruction is completed. The macro instruction is completed after the input data has been moved into the application program's storage area. If EXIT is specified, the RPL exit routine is scheduled. Otherwise the ECB is posted, and CHECK or WAIT is required to determine when the posting occurs.

If ECB=INTERNAL is specified and *synchronous* handling (SYN option) is used, ACF/VTAM uses the ECB-EXIT field in the RPL as an *internal* ECB and clears it. If *asynchronous* handling (ASY option) is used, ACF/VTAM will also use the ECB-EXIT field in the RPL as an internal ECB, but the user must issue a CHECK macro instruction to check and clear it. If neither the ECB nor EXIT keywords are specified, ACF/VTAM treats the field as if ECB=INTERNAL had been specified. See the RPL macro instruction for more information.

OPTCD=SYN | ASY
When the SYN option code is set, control is returned to the application program when the READ macro instruction has been completed. When ASY is set, control is returned as soon as ACF/VTAM has accepted the request. Once the macro instruction has been completed, the ECB is posted or the RPL exit routine is scheduled, as indicated by the ECB-EXIT field.

OPTCD=SPEC|ANY
When the SPEC option code is set, data is obtained from the specific terminal identified in the ARG field, and the data is placed in program storage. If no previously solicited data from that terminal is being held in ACF/VTAM buffers, a solicit operation is performed and the data is moved into program storage. If data is available in ACF/VTAM buffers, the READ macro instruction merely moves the data from the buffers to program storage.

When ANY is set, only data already available from a terminal is moved to program storage. The user does not identify a terminal; the data can originate from *any* terminal connected to the application program. ACF/VTAM obtains the CID of the session with the terminal from which the data originated and places it in the ARG field of the RPL.

A READ macro instruction with OPTCD=ANY can be issued when no terminals are connected if the application program has opened an ACB. The read request is queued until one or more terminals are connected and data arrives from any of them. If a read request with OPTCD=ANY has not been completed and the application program issues a CLSDST macro instruction disconnecting all of its terminals but does not close the ACB, the read request does not have to be reissued after a subsequent OPNDST is issued.

OPTCD=CA|CS
When the CA option code is set, there is no restriction on subsequent retrieval of data from the terminal that is the object of this READ macro instruction.

When CS is set, however, any subsequent input operation will exclude that terminal from the group of terminals eligible for input operations. This exclusion applies only if the ANY option code is in effect for the subsequent operation. See the RPL macro instruction for more information.

Examples

```
READ1      READ       RPL=RPL1,AREA=INFO,AREALEN=132,
                      OPTCD=(ANY,SYN)
            .
            .
            .
INFO       DS         CL132
```

READ1 scans ACF/VTAM buffers for data previously obtained from any connected terminal, and if none has yet been obtained, waits until data arrives. READ1 then places the data into INFO. The CID of the session with the terminal from which the data originated is placed into the ARG field of RPL1. Control is not returned to the program until the read operation has been completed.

```
READ2      READ       RPL=RPL1,ARG=(3),AREA=INFO,AREALEN=132,
                      OPTCD=(SPEC,SYN)
            .
            .
            .
NIB1       NIB        NAME=TERM1,MODE=BASIC
INFO       DS         CL132
```

READ2 operates much like READ1 except that data is being read from a specific terminal. When the terminal was originally connected, the CID for that terminal was placed both in NIB1 and in the RPL used for the connection macro (OPNDST). This example assumes that the CID will be in register 3 when READ2 is executed.

Return of Status Information

Once the READ operation is completed, the following RPL fields are set:

The RECLEN field contains the number of bytes of data that were received by ACF/VTAM.

The ARG field contains the CID of the session with the terminal from which the data originated.

The USER field is set. When a NIB is established, the user has the option of specifying any value in the USERFLD field of that NIB. When the READ macro instruction is subsequently issued for the terminal associated with that NIB, whatever had been placed in USERFLD by the user is placed in the USER field of the RPL by ACF/VTAM.

The value 29 (decimal) is set in the REQ field, indicating a READ request.

If READ is completed normally, as indicated by register 15 and the RTNCD field, the FDBK field is set indicating various attributes of the data just read. See Appendix C.

The SENSE field is set as indicated in Appendix C.

The RTNCD and FDBK2 fields are set as indicated in Appendix C.

Registers 0 and 15 are also set as indicated in Appendix C.

RECEIVE–Receive Input from a Logical Unit (Record Mode Only)

The RECEIVE macro instruction moves data from an ACF/VTAM buffer to an input area in the application program or sets RPL fields to indicate a data flow control command or a response. The data, data flow control command, or response was previously sent from a logical unit. If data is received, it is placed in the input area designated by the application program. Figure 13 illustrates the major options for a RECEIVE macro instruction. Figure 14 illustrates how RECEIVE macro instructions are completed by ACF/VTAM.

The application program designates which of the following types of input can cause the RECEIVE macro instruction to be completed (any combination can be selected):

- Normal-flow requests (such as data requests or a Ready to Receive command
- Expedited-flow requests (such as Release Quiesce)
- RESP responses (responses that can be received with RTYPE=RESP)

Only one type of input can satisfy the RECEIVE macro instruction. When the macro instruction is completed, the RPL's RTYPE field indicates the type actually received. If more than one type of input is available to satisfy a RECEIVE, the following priorities determine which type of input will satisfy the RECEIVE:

1. Expedited data flow control requests
2. RESP responses
3. Normal-flow requests and DFSYN responses

See Figure 14 for an illustration of how the application program can receive the different type of input.

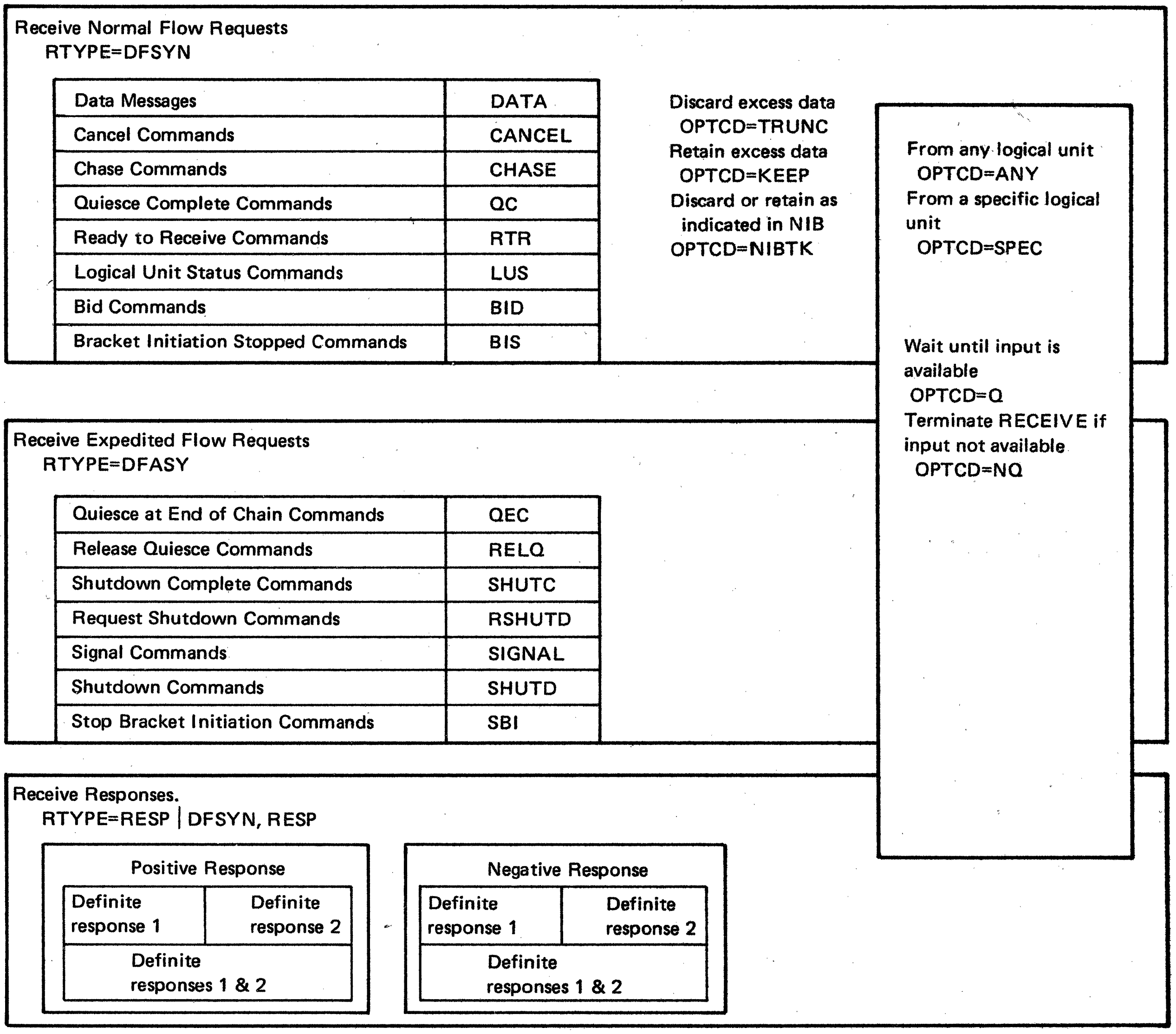
When a logical unit receives a series of requests and responses from a logical unit and either the NIB specifies PROC=NORDRESP or the requests from the application program specify RESPOND=NQRESP, all of the requests arrive in the same order in which they are sent and all of the responses arrive in the same order they were sent, but the order of the combination of requests and responses may be changed. For example, request 1 always arrives before request 2, and response 2 always arrives before response 3; however, a response sent after a particular request may arrive before it. As an example, the logical unit sends the following:

Response 1
Request 1
Request 2
Request 3
Response 2
Response 3
Request 4

They could arrive at the application program as follows:

Response 1
Response 2
Request 1
Response 3
Request 2
Request 3
Request 4

A RECEIVE macro instruction can obtain any one of the following types of input (when the RECEIVE is issued, the application program designates the type or types that can satisfy the macro instruction):



Receive Normal Flow Requests
RTYPE=DFSYN

Data Messages	DATA
Cancel Commands	CANCEL
Chase Commands	CHASE
Quiesce Complete Commands	QC
Ready to Receive Commands	RTR
Logical Unit Status Commands	LUS
Bid Commands	BID
Bracket Initiation Stopped Commands	BIS

Discard excess data
OPTCD=TRUNC
Retain excess data
OPTCD=KEEP
Discard or retain as indicated in NIB
OPTCD=NIBTK

From any logical unit
OPTCD=ANY
From a specific logical unit
OPTCD=SPEC

Wait until input is available
OPTCD=Q
Terminate RECEIVE if input not available
OPTCD=NQ

Receive Expedited Flow Requests
RTYPE=DFASY

Quiesce at End of Chain Commands	QEC
Release Quiesce Commands	RELQ
Shutdown Complete Commands	SHUTC
Request Shutdown Commands	RSHUTD
Signal Commands	SIGNAL
Shutdown Commands	SHUTD
Stop Bracket Initiation Commands	SBI

Receive Responses.
RTYPE=RESP | DFSYN, RESP

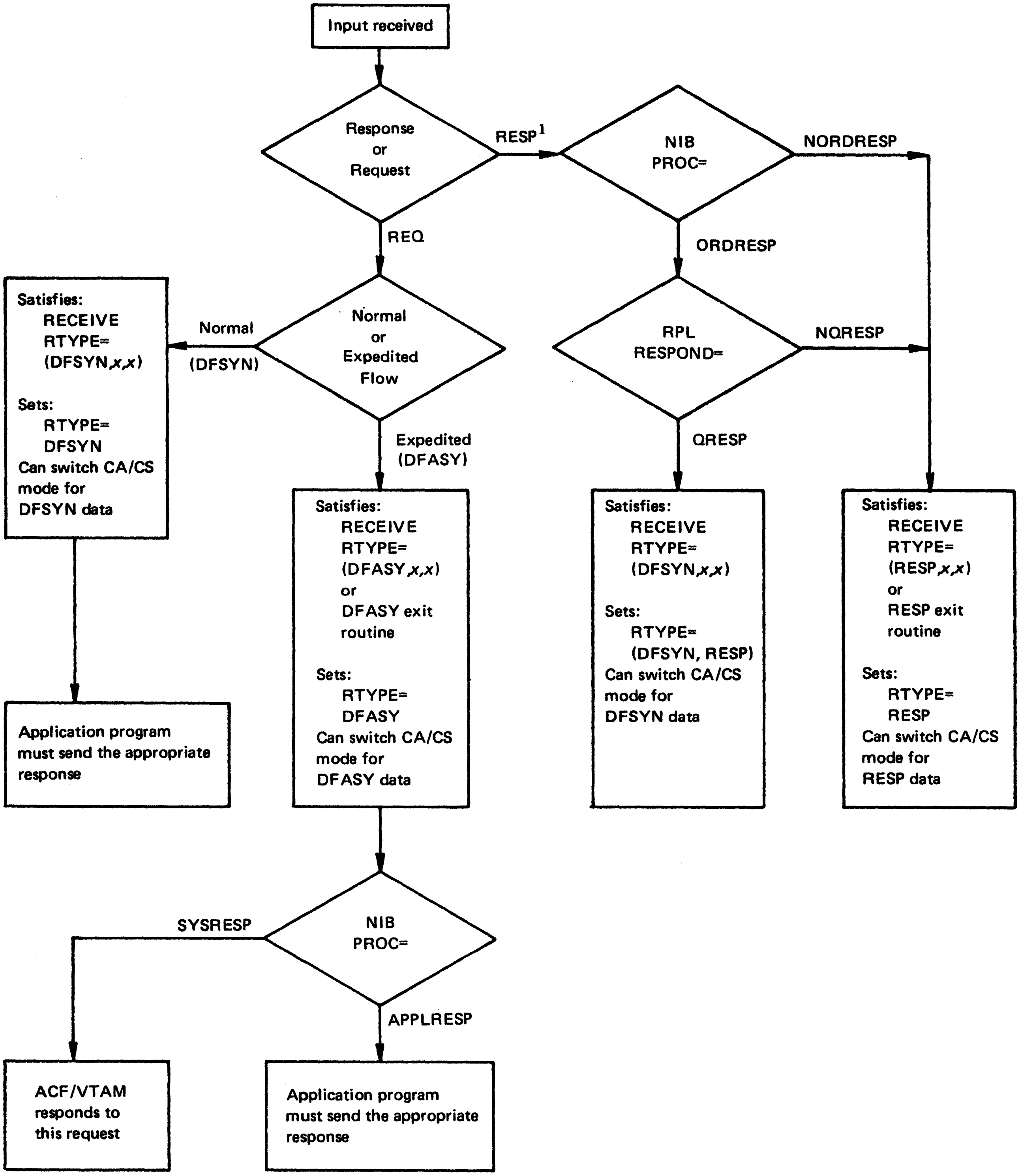
Positive Response

Definite response 1	Definite response 2
Definite responses 1 & 2	

Negative Response

Definite response 1	Definite response 2
Definite responses 1 & 2	

Figure 13. The Major RECEIVE Options


Input received
Response or Request
RESP¹
REQ
NIB PROC=
NORDRESP
ORDRESP
Normal or Expedited Flow
Normal (DFSYN)
Expedited (DFASY)
RPL RESPOND=
NQRESP
QRESP
Satisfies: RECEIVE RTYPE= (DFSYN,x,x) Sets: RTYPE= DFSYN Can switch CA/CS mode for DFSYN data
Satisfies: RECEIVE RTYPE= (DFASY,x,x) or DFASY exit routine Sets: RTYPE= DFASY Can switch CA/CS mode for DFASY data
Satisfies: RECEIVE RTYPE= (DFSYN,x,x) Sets: RTYPE= (DFSYN, RESP) Can switch CA/CS mode for DFSYN data
Satisfies: RECEIVE RTYPE= (RESP,x,x) or RESP exit routine Sets: RTYPE= RESP Can switch CA/CS mode for RESP data
Application program must send the appropriate response
NIB PROC=
SYSRESP
APPLRESP
ACF/VTAM responds to this request
Application program must send the appropriate response

[1] Since ACF/VTAM processes all expedited-flow responses, the application program only receives normal-flow responses. If the application program has a pending SEND POST=RESP macro instruction specified, the response information is set in the SEND's RPL fields and does not satisfy any RECEIVE macro instruction or cause entry to any RESP exit routine.

Figure 14. How RECEIVE Macro Instructions Are Satisfied by ACF/VTAM

If the NIB specifies PROC=ORDRESP and the requests from the application program specify RESPOND=QRESP, all the responses and normal-flow requests arrive in the identical order they were sent as a combined group. (In effect, ACF/VTAM handles the response similar to a normal-flow request.) For example, if the logical unit sends the following:

Response 1
Request 1
Request 2
Request 3
Response 2
Response 3
Request 4

They will arrive at the application program as follows:

Response 1
Request 1
Request 2
Request 3
Response 2
Response 3
Request 4

Name	*Operation*	*Operands*
[symbol]	**RECEIVE**	**RPL=rpl address** **[, rpl field name=new value] ...**

RPL=rpl address

Indicates the location of the RPL that describes the RECEIVE operation.

rpl field name=new value

Indicates an RPL field to be modified and the new value that is to be contained or represented within it. If you wish to avoid the possibility of program reassembly following future releases of ACF/VTAM, set the RPL field with MODCB macro instructions rather than with this RECEIVE macro instruction.

Format: For *rpl field name,* code the keyword of the RPL macro instruction operand that corresponds to the RPL field being modified. ARG can also be coded. The *new value* can be any value that is valid for that operand in the RPL macro instruction, or register notation can be used.

The following RPL operands apply to the RECEIVE macro instruction:

ACB=acb address

Indicates the ACB that identifies the application program and through which the sending logical unit was connected.

ARG=(register)
If a specific logical unit is to be read (OPTCD=SPEC), the ARG operand specifies the register containing the CID of the session with that logical unit. If the ARG field is not modified, the CID already in the RPL's ARG field is used.

AREA=input data area address
The AREA field must contain the address of the area in the application program where the incoming data is to be placed. If a data flow control command is received instead of data, the CONTROL field is posted with a value other than CONTROL=DATA, and the input data area is not used. If a response to data is received, the AREA field is not used. Once the data has been moved, the RPL's RECLEN field is set by ACF/VTAM with the total number of bytes of data received by ACF/VTAM. The AREA field is ignored if AREALEN=0.

AREALEN=length of input data area
The AREALEN field contains the length (in bytes) of the data area pointed to by AREA. This value is used by ACF/VTAM to determine if there is too much incoming data to fit. If there is too much, the action indicated by the TRUNC-KEEP-NIBTK option code is taken.

AREALEN=0 with OPTCD=KEEP can be used to determine the amount of incoming data (the total length is set in RECLEN). A data area can be obtained and the RECEIVE macro instruction reissued. AREALEN=0 with OPTCD=TRUNC can be used to eliminate unwanted data messages that are queued for the application program.

BRANCH=YES|NO
If RECEIVE is to be issued in an application program that is running in privileged state under a TCB (OS/VS2 MVS only), BRANCH can be set to YES. See the RPL macro instruction for more information.

ECB=ecb address
ECB=<u>INTERNAL</u>
EXIT=rpl exit routine address
Indicates the action to be taken by ACF/VTAM when an asynchronous RECEIVE request (OPTCD=ASY) is completed. A RECEIVE request is completed when the request or response has been received, the data (if any) has been placed in the input data area, and the appropriate information has been set in the RPL. If NQ is specified and no input is available, RECEIVE is completed immediately. If EXIT is specified, the RPL exit routine is scheduled. Otherwise, the ECB is posted and CHECK or WAIT must be used to determine when posting occurs.

If ECB=INTERNAL is specified and *synchronous* handling (SYN option) is used, ACF/VTAM uses the ECB-EXIT field in the RPL as an *internal* ECB and clears it. If *asynchronous* handling (ASY option) is used, ACF/VTAM will also use the ECB-EXIT field in the RPL as an internal ECB, but the user must issue a CHECK macro instruction to check and clear it. If neither the ECB nor EXIT keywords are specified, ACF/VTAM treats the field as if ECB=INTERNAL had been specified. See the RPL macro instruction for more information.

OPTCD=SYN|ASY
When SYN is set, control is returned to the application program when the RECEIVE operation is completed. When ASY is set, control is returned as soon as ACF/VTAM has accepted the RECEIVE request; once the operation has been completed, the ECB is posted or the RPL exit routine is scheduled as indicated by the ECB-EXIT field. See the RPL macro instruction for more information.

OPTCD=CA|CS
When the RECEIVE operation is completed successfully, the logical unit is placed into continue-any mode (CA) or into continue-specific mode (CS). This mode determines whether the next RECEIVE (OPTCD=ANY) can be satisfied by the logical unit's next transmission.

This option code has no effect if OPTCD=NQ and the RECEIVE is completed with no input.

With the exception of a RECEIVE that is completed with RTYPE=(DFSYN,RESP), the switch of continue-any and continue-specific modes applies only to the type of input (specified by the RTYPE field) that actually satisfied the RECEIVE. In a RECEIVE this is completed with RTYPE=(DFSYN,RESP), the mode switch only applies to normal-flow (DFSYN) input.

OPTCD=SPEC|ANY
Indicates whether the RECEIVE macro instruction can only be satisfied by input from a specific logical unit (SPEC) or whether it can be satisfied by input from any connected logical unit that is in continue-any mode (ANY).

When OPTCD=SPEC is used, the logical unit's CID must be in the RPL when the macro instruction is executed. When OPTCD=ANY is specified, input from a logical unit in continue-any mode can satisfy a RECEIVE issued with RTYPE=DFASY or RTYPE=RESP only if PROC=NDFASYX or PROC=NRESPX (respectively) is specified in the NIB and if there is no outstanding RECEIVE with OPTCD=SPEC for this logical unit. See the descriptions of DFASY and RESP exit routines for more information.

A RECEIVE macro instruction with OPTCD=ANY can be issued when no logical units are connected to the application program if the application program has opened an ACB. The receive request is queued until one or more logical units are connected and data arrives from any of the logical units in continue-any mode. If a receive request with OPTCD=ANY has not been completed and the application program issues CLSDST macro instructions disconnecting its logical units but does not close the ACB, the receive request does not have to be reissued after a subsequent OPNDST is issued.

At the completion of the RECEIVE macro instruction, the ARG field contains the CID of the session with the logical unit whose input satisfied the RECEIVE.

OPTCD=TRUNC|KEEP|NIBTK
Indicates whether overlength input data is to be truncated (TRUNC), kept (KEEP), or whether the PROC=TRUNC|KEEP setting in the logical unit's NIB is to be used to determine whether the input is to be truncated or kept.

Overlength input data is data whose length exceeds the value set in the AREALEN field of the RECEIVE macro instruction's RPL. When overlength data is truncated, the macro instruction is completed and the excess data is lost.

When overlength data is kept, the macro instruction is completed normally, and RECLEN is set to indicate the total amount of data received by ACF/VTAM. One or more additional RECEIVE macro instructions are required to obtain the excess data. After each RECEIVE, the value of RECLEN is decreased by the amount of data received. When AREALEN=0 is set and OPTCD=KEEP is specified, the entire input is kept.

OPTCD=Q|NQ
Indicates the action to be taken if no input (of the type specified by the RTYPE operand) is available when the macro instruction is executed. OPTCD=Q means that the macro instruction is to be completed when the appropriate input eventually arrives. OPTCD=NQ means that the macro instruction is to be completed immediately with RTNCD=0 and FDBK2=6 if the input is not available.

RTYPE=(DFSYN|NDFSYN,DFASY|NDFASY,RESP|NRESP)
Indicates the types of input that can satisfy this RECEIVE macro instruction. DFSYN means that the RECEIVE macro instruction can be satisfied by (1) a data message (request), (2) a normal-flow control command (request), or (3) a response to either 1 or 2 if RESPOND=QRESP is specified in the RPL and PROC=ORDRESP is specified in the NIB.

DFASY means that expedited data flow control requests can satisfy the RECEIVE macro instruction.

RESP means that the RECEIVE macro instruction can be satisfied by: (1) a response to a data message (request) with RESPOND=NQRESP, or (2) a response to a normal-flow control command (Cancel, for example) that was issued with POST=SCHED and RESPOND=NQRESP, or (3) any normal-flow responses (RESP responses) if the NIB specifies PROC=NORDRESP.

The negative settings (NDFSYN, NDFASY, and NRESP) indicate that the corresponding type of input cannot satisfy the RECEIVE macro instruction. For explanations of normal-flow and expedited-flow requests (messages), see *ACF/VTAM Concepts and Planning.*

Example

```
RCV1          RECEIVE       RPL=RPL1,AREA=INBUF,AREALEN=128,
                            RTYPE=(DFSYN,DFASY,NRESP),
                            OPTCD=(ANY,Q,NIBTK)
```

Assuming that the NIB specifies PROC=ORDRESP, RCV1 is completed when an incoming request (normal-flow or expedited-flow) is available from any logical unit that is in CA mode for that RTYPE. RCV1 can be also completed by a response that causes the RECEIVE to be completed with RTYPE=(DFSYN,RESP) and RESPOND=*x,x,x,* QRESP. Other responses cannot cause RCV1 to be completed. After RCV1 is completed, the application program can examine the CONTROL field of RPL1 to determine the type of input received. If data is received (CONTROL=DATA and RTYPE=DFSYN), the data is placed in INBUF. The TRUNC-KEEP setting in the logical unit's NIB determines what will be done with any data that exceeds 128 bytes.

Return of Status Information

After the RECEIVE operation is completed, the following RPL fields may be set by ACF/VTAM:

> If RECEIVE was issued with OPTCD=ANY, the ARG field contains the CID of the session with the logical unit whose input causes the macro instruction to be completed. If RECEIVE was issued with OPTCD=SPEC, the ARG field still contains the CID that was placed there prior to the execution of the macro instruction.
>
> The RTYPE field indicates the type of input that satisfied the RECEIVE macro instruction. Other RPL fields may be set depending on the type of received input, as shown below:

Field	DFSYN	Value of RTYPE DFASY	RESP or DFSYN,RESP
ARG	X	X	X
RECLEN	X	-	-
SEQNO	X	X	X
RESPOND	X	X	X
USER	X	X	X
REQ	X	X	X
RTNCD	X	X	X
FDBK2	X	X	X
CODESEL	X	-	-
CHNGDIR	X	X[1]	-
BRACKET	X	X[1]	-
CHAIN	X	-	-
SIGDATA	-	X-	
CONTROL	X	X	-
OPTCD	X	-	X
USENSEI	X[2]	-	X
SSENSEI	X[2]	-	X
SSENSMI	X[2]	-	X

[1] Although ACF/VTAM and certain logical units support this RTYPE, it is not supported by SNA.

[2] For exception requests and Logical Unit Status commands only.

The RECLEN field indicates the number of bytes of data received by ACF/VTAM. ACF/VTAM has moved as much of this data as possible into the input data area pointed to by the AREA field. If KEEP is in effect and the value in the RECLEN field exceeds the value in the AREALEN field, there is excess data present that can be obtained with more RECEIVE macro instructions. The value in RECLEN will decrease by an amount equal to the amount of data moved by each RECEIVE macro instruction.

The SEQNO field contains the sequence number of the request or response.

The RESPOND field indicates the type of response that has been received (if RTYPE=RESP or DFSYN,RESP) or the type of response that the logical unit expects in reply (if RTYPE=DFSYN or RTYPE=DFASY and the NIB specifies PROC= APPLRESP), or that ACF/VTAM has already sent a response (if RTYPE=DFSYN and the NIB specifies PROC=SYSRESP).

Note: *If the value in RECLEN exceeds the value in AREALEN and excess data is to be kept, the RESPOND field is set to NEX,NFME,NRRN.*

When a response is received, the RESPOND field for each RPL used to receive the request (if more than one is used) indicates the following:

RESPOND=(*x*,*x*,*x*,QRESP) and in the NIB PROC=ORDRESP	All normal-flow (DFSYN) requests sent before this response have been received.
RESPOND=(*x*,*x*,*x*,NQRESP) or in the NIB PROC=NORDRESP	This response may or may not have been received out or order with respect to normal-flow requests sent before this response.
RESPOND=(EX,FME,RRN,*x*)	This is a negative response with response type 1 and 2 set.
RESPOND=(EX,FME,NRRN,*x*)	This is a negative response with response type 1 set.
RESPOND=(EX,NFME,RRN,*x*)	This is a negative response with response type 2 set.
RESPOND=(EX,NFME,NRRN,*x*)	Invalid.
RESPOND=(NEX,FME,RRN,*x*)	This is a positive response with response type 1 and 2 set.

RESPOND=(NEX,FME,NRRN,*x*) This is a positive response with response type 1 set.

RESPOND=(NEX,NFME,RRN,*x*) This is a positive response with response type 2 set.

RESPOND=(NEX,NFME,NRRN,*x*) Invalid.

When a request is received, the RESPOND field indicates the type of response that is required (the value in the RTNCD field indicates whether the request was received successfully).

RESPOND=(*x*,*x*,*x*,QRESP) (DFSYN response) and in the NIB PROC=ORDRESP Return the appropriate response along with other normal-flow (DFSYN) requests.

RESPOND=(*x*,*x*,*x*,NQRESP)(RESP response) or in the NIB PROC=NORDRESP Return the appropriate response along with other responses.

RESPOND=(EX,FME,RRN,*x*) If the request is processed successfully, no response is sent; if the request is not processed successfully, return a negative response with response type 1 and 2 set.

RESPOND=(EX,FME,NRRN,*x*) If the request is processed successfully, no response is sent; if the request is not processed successfully, return a negative response with response type 1 set.

RESPOND=(EX,NFME,RRN,*x*) If the request is processed successfully, no response is sent; if the request is not processed successfully, return a negative response with response type 2 set.

RESPOND=(EX,NFME,NRRN,*x*) Invalid.

RESPOND=(NEX,FME,RRN,*x*) Return a positive or negative response, as appropriate, with response type 1 and 2 set.

RESPOND=(NEX,FME,NRRN,*x*) Return a positive or nor negative reprocessed sponse, as appropriate, with response type 1 set.

RESPOND=(NEX,NFME,RRN,*x*) Return a positive or negative response, as appropriate, with response type 2 set.

RESPOND=(NEX,NFME,NRRN,*x*) Return no response.

See the *Macro Language Guide* for more information.

The USER field contains the value that was originally set in the USERFLD field of the logical unit's NIB.

The CRYPT field indicates whether or not the normal-flow data request received was sent through the network in an enciphered format. For more information on the CRYPT field see RPL.

The value 35 (decimal) is set in the REQ field, indicating a RECEIVE request.

The RTNCD and FDBK2 fields are set as indicated in Appendix C. Registers 0 and 15 are also set as indicated in Appendix C.

The CODESEL field indicates whether the input is in the standard (STANDARD) or in some other code (ALT) agreed upon by each end of the session (such as EBCDIC or ASCII). ASCII is the only other type of code presently supported.

If ACF/VTAM receives a data request or data response that indicates an FM header is present, OPTCD=FMHDR is set.

The CHNGDIR field indicates whether a Change Direction Request or a Change Direction Command indicator is present:

CHNGDIR=(CMD,NREQ) A Change Direction Command indicator is present; the logical unit was the sender and it has changed direction so that the application program can now transmit normal-flow requests (DFSYN only).

CHNGDIR=(NCMD,REQ) A Change Direction Request indicator is present; the application program is currently sending and the logical unit is requesting the application program to change direction by returning a Change Direction Command indicator and permit the logical unit to send. (Although ACF/VTAM and certain logical units allow this use of a Change Direction indicator, this is not an SNA protocol. Change direction makes use of an indicator that may be used in the future for some other purpose of SNA.)

CHNGDIR=(CMD,REQ) Invalid.

CHNGDIR=(NCMD,NREQ) Neither indicator is present.

The BRACKET field indicates whether the current bracket is beginning, ending, or continuing (DFSYN only):

BRACKET=(BB,NEB) The input is the first of a new bracket.

BRACKET=(NBB,NEB) The input is a continuation of the current bracket. This indicator is also set when brackets are not being used.

BRACKET=(NBB,EB) The input is the end of the current bracket.

BRACKET=(BB,EB) The input itself constitutes an entire bracket.

The CHAIN field indicates the message's relative position within the chain being sent to the application program (DFSYN only):

CHAIN=FIRST The message is the first of a new chain.

CHAIN=MIDDLE The message is a continuation of the current chain.

CHAIN=LAST The message is the last of the current chain.

CHAIN=ONLY The message itself constitutes an entire chain.

The SIGDATA field contains 4 bytes of signal information. This field is set when the RECEIVE is completed with CONTROL=SIGNAL.

The CONTROL field indicates the presence of data or data flow control commands in the message:

CONTROL=	**RTYPE=**	**Meaning**
BID	DFSYN	A Bid command has been received.
BID	RESP	The response to a Bid command has been received.
DATA	DFSYN	A data message (request) has been received.
DATA	RESP	Theresponse to a data message has been received.
QEC	DFASY	A Quiesce at End of Chain command has been received.
RELQ	DFASY	A Release Quiesce command has been received.
QC	DFSYN	A Quiesce Complete command has been received.

CONTROL=	RTYPE=	Meaning
QC	RESP	The response to a Quiesce Complete command has been received.
CANCEL	DFSYN	A Cancel command has been received.
CANCEL	RESP	The response to a Cancel command has been received.
CHASE	DFSYN	A Chase command has been received.
CHASE	RESP	The response to a Chase command has been received.
LUS	DFSYN	A Logical Unit Status command has been received.
LUS	RESP	The response to a Logical Unit Status command has been received.
SIGNAL	DFASY	A Signal command has been received.
RTR	DFSYN	A Ready to Receive command has been received.
RTR	RESP	The response to a Ready to Receive command has been received.
RSHUTD	DFASY	A Request Shutdown command has been received from a logical unit acting as the secondary end of a session.
SHUTC	DFASY	A Shutdown Complete command has been received from a logical unit acting as the secondary end of a session.
SHUTD	DFASY	A Shutdown command has been received from an application program acting as a primary end of a session.
SBI	DFASY	A Stop Bracket Initiation command has been received.
BIS	DFSYN	A Bracket Initiation Stopped command has been received.
BIS	RESP	The response to a Bracket Initiation Stopped command has been received.

When a negative response or Logical Unit Status (LUS) command has been received, the SSENSEI field may contain a system sense value or it is set to 0. See Appendix C for an explanation of the SSENSEI codes.

When the SSENSEI field is set, the SSENSMI field may also be set. The SSENSMI field contains a system sense modifier value; when combined with the SSENSEI value, a specific type of error is identified. The SSENSMI value is tested as a 1-byte binary value. See Appendix C for a list of the SSENSMI values.

When a negative response or Logical Unit Status (LUS) command has been received, the USENSEI field contains a 2-byte user sense value. This value is tested as a 2-byte binary value.

REQSESS–Request That Another Application Program Initiate Connection (Record Mode Only)

The REQSESS macro instruction is used by an application program to request another application program to establish a connection (session) between the two programs in which the application program which issued the REQSESS will act as the secondary end. In effect, the REQSESS macro instruction gives the issuing application program the ability to create a logon and have it sent to the receiving application program, just as a terminal or logical unit can create a logon and have it sent to an application program. The application program issuing the REQSESS macro instruction must adhere to secondary protocols. Before an application program can issue the REQSESS macro instruction, it must have issued a SETLOGON OPTCD=START macro instruction. If the application program has not previously issued a SETLOGON macro instruction or if it issues a REQSESS without first opening an ACB, the REQSESS macro instruction will fail.

Requesting connection to multiple application programs, requires a separate REQSESS macro instruction for each application program. If a list of NIBs is specified in REQSESS macro instruction, only the application program specified in the first NIB is sent a logon. The remainder of the NIBs are ignored.

Name	*Operation*	*Operands*
[symbol]	REQSESS	RPL=rpl address [, rpl field name=new value] . . .

RPL=rpl address

Indicates the location of the RPL to be used during REQSESS processing.

rpl field name=new value

Indicates an RPL field to be modified and the new value that is to be contained within it. If you wish to avoid the possibility of program reassembly following future releases of ACF/VTAM, set the RPL field with MODCB macro instructions rather than with the REQSESS macro instruction.

Format: For *rpl field name,* code the keyword of the RPL macro instruction operand that corresponds to the RPL field to be modified. The *new value* can be any value that is valid for that operand in the RPL macro instruction, or it can be a register that contains the value.

The following RPL operands aply to the REQSESS macro instruction:

ACB=acb address

Indicates the ACB for the application program that issues the REQSESS macro instruction and will act as the secondary end of the session.

NIB=nib address

Indicates the NIB whose NAME field contains the symbolic name of the primary application program with which the secondary application program wishes to be connected. In addition to NAME, the following NIB fields are used by REQSESS:

LOGMODE

Specifies the suggested logon mode to be used in the session being established. This logon mode applies to the logon mode table associated with the application program issuing the REQSESS macro instruction.

LISTEND
Must be set to YES to indicate that the NIB is a single entry in the list.

MODE
Must be set to RECORD.

ECB=ecb address
ECB=INTERNAL
EXIT=exit routine address
Indicates the action to be taken when an *asynchronous* (OPTCD=ASY) REQSESS macro instruction is completed.

If EXIT is specified, the RPL exit routine is scheduled. Otherwise, the ECB is posted, and CHECK or WAIT must be used to determine when posting occurs.

If ECB=INTERNAL is specified and *synchronous* handling (OPTCD=SYN) is used, ACF/VTAM uses the ECB-EXIT field in the RPL as an *internal* ECB and clears it. If *asynchronous* handling (OPTCD=ASY) is used, ACF/VTAM uses the ECB-EXIT field as an internal ECB, but the user must issue a CHECK macro instruction to check and clear it. If neither the ECB nor EXIT keyword is specified, ACF/VTAM treats the field as if ECB=INTERNAL had been specified. See the RPL macro instruction for more information.

AREA=address of user data
Indicates the location of the user logon data that is to be sent to the other application program as a part of the logon. This data is treated like the user data that may accompany a logon that originates from a terminal or logical unit. If this field is used, the RECLEN field must also be specified.

RECLEN=user data length
Indicates the number of bytes of user logon data (located at the AREA address) to be sent to the receiving application program. If the RECLEN field is set to 0, the AREA field is ignored.

AAREA=0
The AAREA field msut be set to 0 whenever the REQSESS macro instruction is issued. If a value other than 0 is present in this field, the REQSESS macro instruction will fail.

OPTCD=SYN | ASY
When SYN is set, control is returned to the application program that issued REQSESS when the REQSESS macro instruction is completed and the logon is queued. When ASY is set, control is returned as soon as ACF/VTAM has accepted the REQSESS. Once the REQSESS macro instruction is completed, the ECB is posted or the RPL exit routine is scheduled, as indicated in the ECB-EXIT field. See the RPL macro instruction for more information.

OPTCD=NQ
The NQ option must be set whenever the REQSESS macro instruction is issued. If OPTCD=Q is specified, or the default (OPTCD=–) is taken, an error will result. If the application program to which the REQSESS is directed is not available (that is, has not opened its ACB, has an opened ACB that specifies MACRF=NLOGON, is in the process of closing its ACB, has issued SETLOGON=QUIESCE, or is unavailable because of an error condition), the REQSESS macro instruction will be rejected. If the application program to which the REQSESS is directed has opened an ACB that specifies MACRF=LOGON but has not issued a SETLOGON with OPTCD=START, the logon will be queued and the REQSESS macro instruction will be completed successfully.

Example

```
CALLPRI    REQSESS    RPL=RPLA1,NIB=NIBPA1,OPTCD=(ASY,NQ),
                      EXIT=RQEXRTN,AREA=LOGMSG,RECLEN=L'LOGMSG,
                      AAREA=0
                .
                .
                .
RPLA1      RPL        ACB=ACB1,AM=VTAM
NIBPA1     NIB        NAME=GRACIE,LISTEND=YES,
                      LOGMODE=MODE1,MODE=RECORD
LOGMSG     DC         C'LOGON REQUEST FROM USER 09'
```

CALLPRI requests a session between the application program (USER09) associated with ACB1, which will act as the secondary end of the session, and application program GRACIE, which will act as the primary end of the session. When the REQSESS macro instruction is completed, RQEXRTN will be scheduled.

Return of Status Information

After the REQSESS macro instruction is completed, the following RPL fields are set:

The value 41 (decimal) is set in the REQ field, indicating a REQSESS request.

The RTNCD and FDBK2 fields are set as indicated in Appendix C.

Registers 0 and 15 are also set as indicated in Appendix C.

If the REQSESS macro instruction returns an error code, the SSENSEI, SSENSMI, and USENSEI fields are set indicating system sense information, system sense modifier, and user sense information. There is more information about these fields in Appendix C.

RESET—Cancel an I/O Operation (Basic Mode Only)

The RESET macro instruction can be used to:

- Cancel an I/O operation that is pending, but is not yet in the process of being completed (that is, no data transfer activity has yet begun). This form of RESET is selected by setting the COND option code.
- Cancel an I/O operation, whether it is pending or in the process of being completed, and in addition reset any error lock that may have been set for the terminal. This form of RESET is selected by setting the UNCOND option code.
- Reset any error lock that may have been set for the terminal, without canceling any pending I/O operation. This form of RESET is selected by setting the LOCK option code.

When a request is canceled, ACF/VTAM "completes" the canceled request (that is, returns control, posts the ECB, or schedules an RPL exit routine, as indicated by the SYN-ASY option code and the ECB-EXIT field) with a return code indicating that a RESET caused the request to be terminated. (The completion of the canceled request and the completion of RESET occur independently of each other; it is impossible at assembly time to know which will complete first.)

Name	*Operation*	*Operands*
[symbol]	**RESET**	**RPL=rpl address** **[, rpl field name=new value]...**

RPL=rpl address
Indicates the location of the RPL that governs the execution of the RESET macro instruction.

rpl field name=new value
Indicates an RPL field to be modified and the new value that is to be contained or represented within it. If you wish to avoid the possibility of program reassembly following future releases of ACF/VTAM, set the RPL field with MODCB macro instructions rather thawith the RESET macro instruction.

Format: For *rpl field name* code the keyword of the RPL macro instruction operand that corresponds to the RPL field being modified. ARG can also be coded. The *new value* can be any value that is valid for that operand in the RPL macro instruction, or it can indicate a register. The value supplied for the ARG keyword must indicate a register.

The following RPL operands apply to a RESET macro instruction:

ACB=acb address
Indicates the ACB that identifies the application program.

ARG=(register)
Indicates the register containing the CID of the session. The ARG field of RESET's RPL must contain the CID of the session with the terminal whose I/O operation is to be canceled or whose error lock is to be reset. Register notation is used to place the CID into the ARG field with this RESET macro instruction. Note that you do not issue RESET for a particular request; you issue RESET for a specific *terminal*, and let ACF/VTAM deal with any requests that may be outstanding for that terminal.

ECB=ecb address
ECB=INTERNAL
EXIT=rpl exit routine address
Indicates the action to be taken by ACF/VTAM when an asynchronous (OPTCD=ASY) RESET macro instruction is completed. For OPTCD=LOCK, the macro instruction is completed when the error lock has been reset. For OPTCD=COND or OPTCD=UNCOND, the macro instruction is completed when all outstanding I/O requests to the terminal have been posted complete. If EXIT is specified, the RPL exit routine is scheduled. Otherwise the ECB is posted, and CHECK or WAIT must be used to determine when the posting occurs.

If ECB=INTERNAL is specified and *synchronous* handling (SYN option) is used, ACF/VTAM uses the ECB-EXIT field in the RPL as an *internal* ECB and clears it. If *asynchronous* handling (ASY option) is used, ACF/VTAM will also use the ECB-EXIT field in the RPL as an internal ECB, but the user must issue a CHECK macro instruction to check and clear it. If neither the ECB nor EXIT keywords are specified, ACF/VTAM treats the field as if ECB=INTERNAL had been specified. See the RPL macro instruction for more information.

OPTCD=SYN | ASY
When the SYN option code is set, control is returned to the application program when the macro instruction has been completed. When ASY is set, control is returned as soon as ACF/VTAM has accepted the request. Once the macro instruction has been completed, the ECB is posted or the RPL exit-routine is scheduled, as indicated by the ECB-EXIT field.

OPTCD=CA | CS
When CA is set, data obtained from the terminal can satisfy a READ macro instruction. When CS is set, only READ (OPTCD=SPEC) macro instructions can obtain data from the terminal. See the RPL macro instruction for more information.

OPTCD=COND | UNCOND | LOCK

COND
RESET cancels any I/O operation that has been initiated, but for which no data has been transferred. If data transfer is in progress when RESET is executed the RPL's RTNCD and FDBK2 fields are set to indicate that cancelation did not occur (RTNCD=0, FDBK2=1). If an I/O operation is pending, that operation is posted as completed (IO=COMPLETE if an internal ECB was used), and the RTNCD and FDBK2 fields of that request's RPL indicate that RESET caused the premature completion of the operation. The RESET RPL itself is posted to indicate normal completion. The RESET RPL is also posted to indicate normal completion if there is no I/O in progress to be canceled.

OPTCD=COND cannot be used if an error lock has been set for the terminal. Use one of the other forms of RESET to reset the error lock. (FDBK2 codes returned from the I/O request indicate whether the I/O operation failed and, if so, whether an error lock was set.) OPTCD=COND is appropriate when the application program wants to write to a terminal only if no data is being sent (and can tolerate a resulting delay).

The RESET operation is completed when all of the pending I/O operations for the terminal have been canceled (or is completed immediately if ACF/VTAM determines that I/O is in progress).

UNCOND

RESET cancels any I/O operation, pending or otherwise, that is being performed with the terminal. If an internal ECB was used, the RPL is set to IO=COMPLETE. (If there is no I/O operation to be canceled, RESET completes normally.) Any data that a canceled solicit operation has already brought into ACF/VTAM storage buffers is available for retrieval by the application program. Data that is being sent or is about to be sent, however, may be lost. When a solicit, read, or write operation is canceled, that operation is posted as completed, and the RTNCD and FDBK2 fields of its RPL indicate that RESET caused the premature completion of the operation. OPTCD= UNCOND also causes RESET to perform the same resetting operation indicated below with OPTCD=LOCK. OPTCD=UNCOND is appropriate when a terminal is being solicited for input, but the application program wants to immediately write to the terminal without delay (and can tolerate a possible loss of data).

OPTCD=UNCOND causes the communications controller to do the following: For start-stop devices with the break feature a reset immediate is sent, and for other start-stop devices, a reset ahead-of-command is sent; for BSC devices, a reset orderly (RVI) is sent. Any outstanding WRITE operations to the terminal are posted completed, with their return codes indicating that the operation was canceled by RESET. The OPTCD=UNCOND will not necessarily always perform the reset unconditionally when issued to a BSC device the first time. An unsuccessful return code may occur. When this occurs, reissue the RESET until it is successful.

The RESET operation is completed when all of the I/O requests for the terminal have been canceled.

Note: *If a RESET macro instruction is issued to cancel an I/O operation, an EOT must be sent to release the line.*

If a read request is pending for a binary synchronous device at the time RESET is issued, the application program must continue to issue read requests until an EOT is received. (The FDBK field is set upon receipt of an EOT.) If a read request is pending for a start-stop device without the break feature, the application program must continue to issue read requests until the amount of data solicited from the device has been obtained. That is, if PROC=TRANS is in effect for SOLICIT, reads must be issued until an EOT is received; if PROC=MSG is in effect, reads must be issued until EOM is received, and so forth. If a read request is pending for a start-stop device *with* the break feature, the application program must allow that read to complete before issuing RESET, but no further reads need be issued. (If that read results in excess data being received, a second read to obtain that excess data would have to be issued, however, before RESET could be issued.)

LOCK

RESET resets an error lock that has been set for the terminal. The RESET operation is completed as soon as the error lock is reset. Error locks are set by a communications controller when it determines that is should not or cannot continue to communicate with a terminal until the application program determines the next action to be performed.

If several WRITE requests have been issued and an error lock is set before all have been completed, resetting the error lock restarts the remaining WRITE operations.

Note: *This type of RESET should not be used if the error lock was set while a DO macro instruction involving more than one LDO was being executed. Use RESET with OPTCD=UNCOND instead.*

You can determine that an error lock has been set by examining the RTNCD and FDBK2 fields of each I/O request's RPL. The error lock is set if any of the following RTNCD-FDBK2 codes are returned (see Appendix C):

RTNCD	FDBK2	Type of Error
4	0	RVI received
4	1	Attention or reverse break received
12 (X'0C')	0	Error lock set
12 (X'0C')	1	Terminal not usable
12 (X'0C')	2	Request canceled by TRM
12 (X'0C')	6	NCP abended, restart successful
12 (X'0C')	15 (X'0F')	Yielded to contention
16 (X'10')	4	ACF/VTAM/NCP incompatibility
16 (X'10')	11 (X'0B')	Dial-out disconnection
16 (X'10')	12 (X'0C')	Dial-in disconnection
20 (X'14')	47 (X'2F')	Too many leading graphic characters
20 (X'14')	48 (X'30')	Invalid LEN field
20 (X'14')	49 (X'31')	Invalid data area
20 (X'14')	50 (X'32')	Request invalid for specified device
20 (X'14')	51 (X'33')	WRITE canceled (input arriving)
20 (X'14')	52 (X'34')	First I/O not READ or SOLICIT
20 (X'14')	53 (X'35')	Terminals not attached to same control unit
20 (X'14')	54 (X'36')	RESET (LOCK) invalid
20 (X'14')	55 (X'37')	Terminal not connected (copy LDO)
20 (X'14')	57 (X'39')	Invalid PROC option

Example

```
RESET1     RESET      RPL=RPL1,ARG=(3),ECB=ECBWORD,
                      OPTCD=(ASY,UNCOND)
             .
             .
             .
ECBWORD    DC         F(0)
RPL1       RPL        ACB=ACB1,AM=VTAM
```

RESET1 cancels any I/O operation pending or in progress for the session whose CID has been loaded into register 3. As soon as the cancellation has been scheduled, control is returned to the next instruction after RESET1. To verify that the cancellation has been completed, a CHECK macro instruction must be issued to determine if ECBWORD has been posted.

Return of Status Information

After the operation is completed, the following RPL fields are set:

The value 18 (decimal) is set in the REQ field, indicating a RESET request.

The USER field is set.

The RTNCD and FDBK2 fields are set as indicated in Appendix C.

Registers 0 and 15 are also set as indicated in Appendix C.

RESETSR–Cancel RECEIVE Operations and Switch a Logical Unit's CA-CS Mode (Record Mode Only)

The RESETSR macro instruction is used to change the continue-any or continue-specific mode of a specified logical unit and to cancel RECEIVE with OPTCD=SPEC macro instructions that are outstanding for the logical unit. Figure 15 summarizes the functions of RESETSR and their associated operands.

Changing CA-CS Mode

RESETSR changes a logical unit's continue-any (CA) or continue-specific (CS) mode in the same manner as do SEND and RECEIVE macro instructions.

When the CA-CS option code is set to CA, RESETSR places the logical unit into continue-any mode if it is not already in that mode. Continue-any mode means that RECEIVE macro instructions issued in the any-mode (OPTCD=ANY) as well as in the specific-mode (OPTCD=SPEC) can be satisfied by input from the logical unit.

When the CA-CS option code is set to CS, RESETSR places the logical unit into continue-specific mode, if it is not already in that mode. Continue-specific mode means that *only* RECEIVE macro instructions issued in the specific-mode can be satisfied by input from the logical unit.

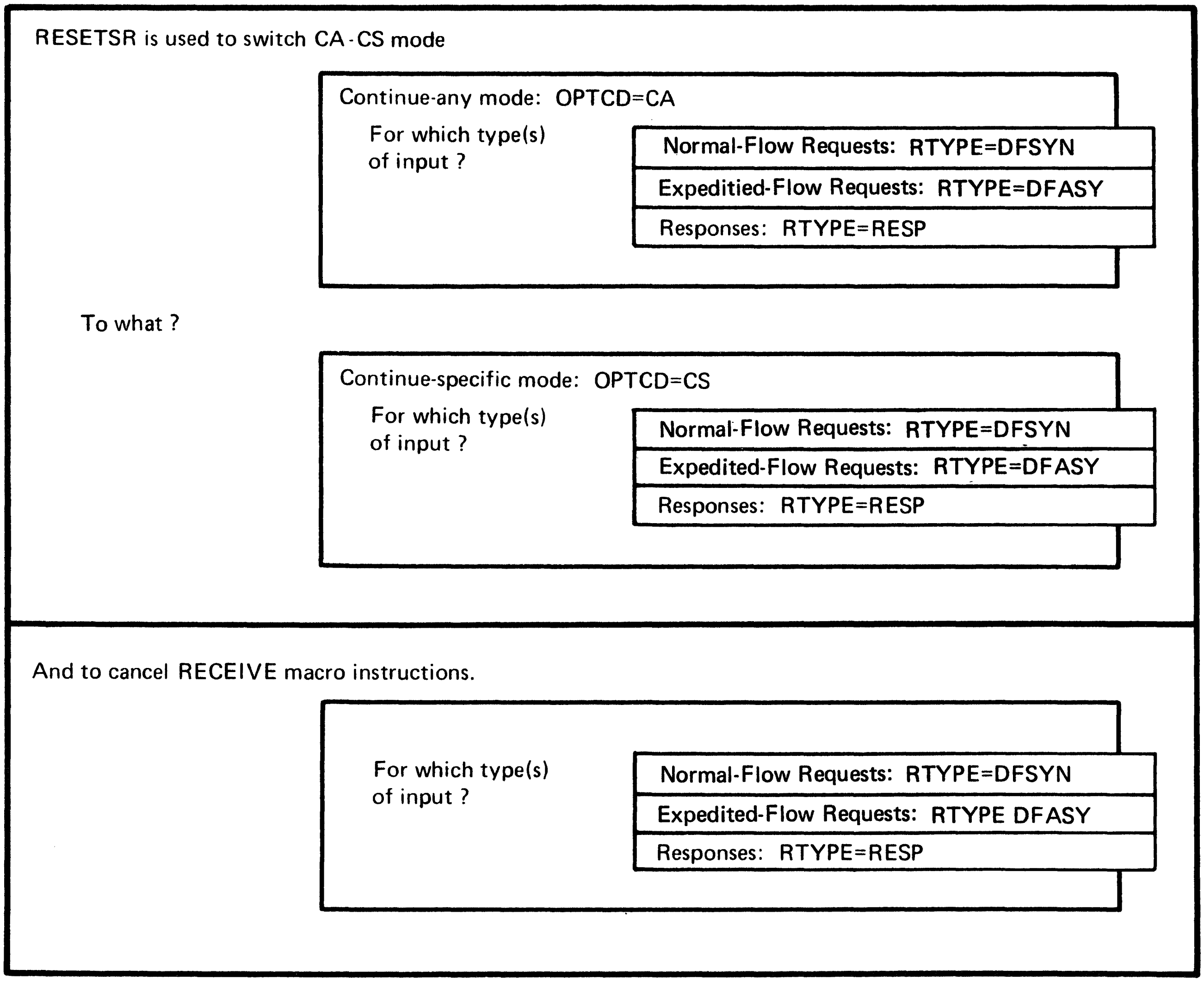

RESETSR is used to switch CA-CS mode
Continue-any mode: OPTCD=CA
For which type(s) of input ?
Normal-Flow Requests: RTYPE=DFSYN
Expeditied-Flow Requests: RTYPE=DFASY
Responses: RTYPE=RESP
To what ?
Continue-specific mode: OPTCD=CS
For which type(s) of input ?
Normal-Flow Requests: RTYPE=DFSYN
Expedited-Flow Requests: RTYPE=DFASY
Responses: RTYPE=RESP
And to cancel RECEIVE macro instructions.
For which type(s) of input ?
Normal-Flow Requests: RTYPE=DFSYN
Expedited-Flow Requests: RTYPE DFASY
Responses: RTYPE=RESP

Figure 15. The Major RESETSR Options

A logical unit's CA-CS mode does not apply generally to all input from the logical unit, but applies individually for the three types of input from the logical unit—normal-flow requests, expedited-flow requests, and responses. The application program selects the type or types of input by setting the RPL's RTYPE field.

For example, suppose that RESETSR is issued with the CA-CS option set to CS (change to CS mode), and the RTYPE field set to DFASY (expedited-flow requests). When the RESETSR macro instruction is completed, the logical unit is placed in continue-specific mode for expedited-flow requests. This would mean that expedited-flow requests sent by the logical unit could not satisfy a RECEIVE issued in the any-mode; they could only satisfy a RECEIVE macro instruction issued in the specific-mode.

If a RESETSR, issued to change a logical unit's CA-CS mode, completes successfully (that is, actually changes the mode) and there is a pending SEND or RECEIVE, the SEND or RECEIVE may not complete successfully. The mode specified in the RESETSR may conflict with the OPTCD=ANY or OPTCD=SPEC that is specified in the pending SEND or RECEIVE.

Note: *If program performance is a critical factor, it may be more efficient to change the CA-CS mode in the SEND macro for the last response.*

Canceling RECEIVE Requests

The RTYPE field of the RESETSR's RPL indicates, for the designated logical unit, the type or types of RECEIVE requests that are canceled. For every RTYPE specified in the RESETSR macro, ACF/VTAM sets the corresponding RTYPE operand to its negative value (NDFSYN, NDFASY, NRESP) in each pending RECEIVE with OPTCD=SPEC for the logical unit. A RECEIVE is canceled if the combination of input types specified in its RPL is included in those specified in the RESETSR macro instruction.

For example, suppose that these three specific RECEIVE macro instructions are pending:

```
RCV1    RECEIVE     RPL=RPL1,RTYPE=(DFSYN,NDFASY,NRESP)
RCV2    RECEIVE     RPL=RPL2,RTYPE=(DFSYN,DFASY,NRESP)
RCV3    RECEIVE     RPL=RPL3,RTYPE=(DFSYN,DFASY,RESP)
```

The following RESETSR macro instruction would change all DFSYN values to NDFSYN and all DFASY values to NDFASY:

```
RST     RESETSR     RPL=RPL4,RTYPE=(DFSYN,DFASY)
```

Since the three RECEIVE macros would in effect now be set as follows, RCV1 and RCV2 would be canceled (all three RTYPE operands are negative), but RCV3 would not be canceled:

```
RCV1    RECEIVE     RPL=RPL1,RTYPE=(NDFSYN,NDFASY,NRESP)
RCV2    RECEIVE     RPL=RPL2,RTYPE=(NDFSYN,NDFASY,NRESP)
RCV3    RECEIVE     RPL=RPL3,RTYPE=(NDFSYN,NDFASY,RESP)
```

When a RECEIVE is canceled, its RPL is posted complete (that is control is returned, its ECB is posted, or its exit routine is scheduled) with RTNCD=12 and FDBK2=10. The OPTCD=CA|CS setting of each canceled RPL is ignored.

Note: *If a CA-CS mode is also specified, it may change the CA-CS mode as described above.*

Name	*Operation*	*Operands*
[symbol]	RESETSR	RPL=rpl address [,rpl field name=new value] . . .

RPL=rpl address

Indicates the location of the RPL that describes the RESETSR operation.

rpl field name=new value

Indicates an RPL field to be modified and the new value that is to be contained or represented within it. If you wish to avoid the possibility of program reassembly following future releases of ACF/VTAM, set the RPL field with MODCB macro instructions rather than with this RESETSR macro instruction.

Format: For *rpl field name* code the keyword of the RPL macro instruction operand that corresponds to the RPL field being modified. ARG can also be coded. The *new value* can be any value that is valid for that operand in the RPL macro instruction, or register notation may be used.

The following RPL operands apply to the RESETSR macro instruction:

ACB=acb address

Indicates the ACB that identifies the application program and was used when the logical unit was connected.

ARG=(register)

The RESETSR macro instruction is always directed toward a specific logical unit. The ARG operand specifies the register containing the CID of that session. If the ARG field is not modified, the CID already in the RPL's ARG field is used.

ECB=ecb address
ECB=<u>INTERNAL</u>
EXIT=rpl exit routine address

Indicates the action to be taken by ACF/VTAM when an asynchronous (OPTCD=ASY) RESETSR request is completed. A RESETSR request is completed when the appropriate macro instructions have been canceled, and the logical unit's CA-CS mode has been set. If EXIT is specified, the RPL exit routine is scheduled. Otherwise the ECB is posted and CHECK or WAIT must be used to determine when posting occurs.

If ECB=INTERNAL is specified and *synchronous* handling (SYN option) is used, ACF/VTAM uses the ECB-EXIT field in the RPL as an *internal* ECB and clears it. If *asynchronous* handling (ASY option) is used, ACF/VTAM will also use the ECB-EXIT field in the RPL as an internal ECB, but the user must issue a CHECK macro instruction to check and clear it. If neither the ECB nor EXIT keywords are specified, ACF/VTAM treats the field as if ECB=INTERNAL had been specified. See the RPL macro instruction for more information.

BRANCH=YES | NO (OS/VS2 MVS only)

If RESETSR is to be issued in an application program that is running in privileged state under a TCB, BRANCH can be set to YES. See the RPL macro instruction for more information.

OPTCD=SYN|ASY

When SYN is set, control is returned to the application program when the RESETSR operations have been completed. When ASY is set, control is returned as soon as ACF/VTAM has accepted the RESETSR request; once the operations have been completed, the ECB is posted or the RPL exit routine is scheduled, as indicated by the ECB-EXIT field. See the RPL macro instruction for more information.

OPTCD=CA|CS

This option code determines whether the logical unit is placed in continue-any (CA) or continue-specific (CS) mode. The new CA-CS mode applies to the type of input specfied in the RTYPE field. CA-CS mode is explained in the RPL macro instruction and in *ACF/VTAM Macro Language Guide.*

RTYPE=(DFSYN|NDFSYN,DFASY|NDFASY,RESP|NRESP)

The RTYPE operand indicates the type of input to be affected by the resetting of the logical unit's continue-any or continue-specific mode and which outstanding RECEIVE macros are to be canceled. (Continue-any mode means that input from the logical unit can satisfy a RECEIVE issued in the any-mode; continue-specific mode means that it cannot.)

DFSYN

The logical unit's CA-CS mode applies to normal-flow requests; NDFSYN means that the logical unit's CA-CS mode for normal-requests is not affected.

DFASY

The logical unit's CA-CS mode applies to expedited-flow requests; NDFASY means that the logical unit's CA-CS mode for normal-requests is not affected.

RESP

The logical unit's CA-CS mode applies to response units; NRESP means that the logical unit's CA-CS mode for responses is not affected.

The RTYPE operand also designates the type of pending RECEIVE to be canceled. A RECEIVE request is canceled, however, only if all of the input types specified for the RECEIVE requests's RTYPE field are also included among those specified on the RESETSR request's RTYPE field. When the RECEIVE request is canceled, its RPL is posted complete with RTNCD=12 and FDBK2=10.

DFSYN

Any pending RECEIVE macro instructions that would receive normal-flow requests and queued responses are canceled; NDFSYN means that RECEIVE requests for this type of input are not canceled.

DFASY

Any pending RECEIVE macro instructions that would receive expedited-flow requests are canceled; NDFASY means that that RECEIVE requests for this type of input are not canceled.

RESP

Any pending RECEIVE macro instructions that would receive normal-flow responses are canceled; NRESP means that RECEIVE requests for responses are not canceled.

Example

```
RST1          RESETSR       RPL=RPL1,OPTCD=CA,
                            RTYPE=(DFSYN,NDFASY,NRESP)
```

RST1 cancels pending RECEIVE (OPTCD=SPEC, RTYPE=DFSYN) macro instructions for the logical unit identified in RPL1's ARG field. RST1 also switches the terminal's CA-CS mode for normal-flow requests to continue-any (CA) mode. That is, a RECEIVE macro instruction (RTYPE=DFSYN) can obtain normal-flow input from the logical unit. The logical unit's CA-CS mode for DFASY and RESP input is not affected; RECEIVE macro instructions for these request types are also not affected.

Return of Status Information

After the RESETSR operation is completed, the following RPL fields are set:

The value 36 (decimal) is set in the REQ field, indicating a RESETSR request.

The RTNCD and FDBK2 fields are set as indicated in Appendix C.

Registers 0 and 15 are also set as indicated in Appendix C.

RPL—Create a Request Parameter List

Every request that an application program makes for connection or for I/O operations must refer to an RPL. A request parameter list, or RPL, is a control block used by the application program to describe the requests it makes to ACF/VTAM. The application program may, for example, simply issue a RECEIVE macro and indicate an RPL; it is the RPL that shows ACF/VTAM which logical unit the input is to be obtained from, where the input data is to be placed, how the application program is to be notified when the operation is completed, and a variety of other options to be followed while the request is being processed. If the RPL already contains a request code in its REQ field, an EXECRPL macro can be used in place of the RPL-based macro indicated in REQ.

An application program can create many RPLs; a separate RPL can, in fact, be created for every connection and I/O request in the application program. Or, at the other extreme, one RPL could serve for all connection and I/O requests in the program (assuming that all the requests were synchronous—that is, issued with OPTCD=SYN set). This multiple use of an RPL is possible because each connection and I/O request can itself modify fields of the RPL to which it points. The RPL can thus be thought of as the list form of all of the connection and I/O macros.

If the same RPL is used for multiple requests, it is good programming practice to reset the RPL control block fields after the request has completed. All ACB, NIB, and RPL fields that are not used by a particular macro instruction should be set to zero unless otherwise indicated.

The RPL macro instruction builds an RPL during assembly. The RPL is built on a fullword boundary. An RPL can also be generated during program execution with the GENCB macro instruction. See GENCB for a description of this facility.

Requests for RPL modification can be made as part of a connection or I/O macro, or by the MODCB macro instruction. Either way involves naming an RPL field and specifying its new value. It is useful to keep in mind that every operand of the RPL macro represents a field in the RPL it generates. Subsequent requests to modify any RPL field use the keyword of the operand corresponding to the field being modified.

Assumed (default) values for most of the RPL fields are set by ACF/VTAM when the RPL is initially assembled or generated. These assumed values are noted in the operand descriptions below. Once an RPL field has been set, however, the field is never reset by ACF/VTAM to its original value (three exceptions to this rule—the SSENSEO, SSENSMO, and USENSEO fields—are noted below).

Although all of the RPL operands are optional (with the exception of AM=VTAM) and may be specified with any of the RPL-based macro instructions, all of the RPL-based macro instructions require that certain RPL fields be set when the macro instruction is executed. These fields are identified in Figure 16 at the end of this macro instruction description.

<table>
<tr><th><em>Name</em></th><th><em>Operation</em></th><th><em>Operands</em></th></tr>
<tr><td>[symbol]</td><td>RPL</td><td>AM=VTAM
[, ACB=acb address]
[, NIB=nib address]
[, AREA=data area address]
[, AREALEN=data area length]
[, RECLEN=data length]
[, AAREA=alternate data area address]
[, AAREALN=alternate data area length]
[{,ECB=INTERNAL
,ECB=event control block address
,EXIT=rpl exit routine address}]
[, BRANCH=YES[1] |NO]
[, SEQNO=sequence number]
[, POST=SCHED|RESP]
[, RESPOND=(EX|NEX,FME|NFME,RRN|NRRN,
QRESP|NQRESP)]
[, CONTROL=(DATA|QEC|RELQ|QC|CANCEL|
CHASE|SHUTD|BID|LUS|SDT|
CLEAR|STSN|RTR|RSHUTD|
SHUTC|RQR|BIND|UNBIND|SBI|
BIS|SIGNAL)]
[, CHAIN=FIRST|MIDDLE|LAST|ONLY]
[, CHNGDIR=(CMD|NCMD,REQ|NREQ)]
[, CRYPT=YES|NO] [4]
[, BRACKET=(BB|NBB, EB|NEB)]
[, RTYPE=(DFSYN|NDFSYN, DFASY|NDFASY,
RESP|NRESP)]
[, STYPE=REQ|RESP]
[, SSENSEO=0|CPM|STATE|FI|RR] [2]
[, SSENSMO=system sense modifier value] [2]
[, USENSEO=user sense value] [2]
[, IBSQAC=SET|TESTSET|INVALID|IGNORE]
[, OBSQAC=SET|TESTSET|INVALID|IGNORE]
[, IBSQVAL=inbound sequence number]
[, OBSQVAL=outbound sequence number]
[, SIGDATA=signal data]
[, CODESEL=STANDARD|ALT]
[, OPTCD=([, NIBTK|TRUNC|KEEP]
[, NFMHDR|FMHDR]
[, CONALL|CONANY]
[, ACCEPT|ACQUIRE]
[, SPEC|ANY]
[, QUIESCE|STOP|START]
[, RELEASE|PASS]
[, LOGONMSG|DEVCHAR|
COUNTS|TERMS|APPSTAT|
CIDXLATE|TOPLOGON|
BSCID|SESSPARM|SESSKEY[4]]
[, SYN|ASY]
[, CA|CS]
[, BLK|LBM|LBT[3]]
[, NCONV|CONV]
[, COND|UNCOND|LOCK]
[, NERASE|ERASE|EAU]
[, RELRQ|NRELRQ]
[, Q|NQ])]</td></tr>
</table>

[1] The BRANCH=YES operand is valid only in OS/VS2 MVS.

[2] These fields are cleared by ACF/VTAM each time the RPL is reset to its inactive state.

[3] Since OPTCD=BLK is invalid for 3270 terminals, the default for those devices is OPTCD=LBT.

[4] Applies only to the Encrypt/Decrypt Feature of ACF/VTAM.

AM=VTAM

Indicates that an ACF/VTAM RPL is to be built. This operand is required.

ACB=acb address

Associates the request that will use this RPL with an ACB.

Format: Expressions involving registers cannot be used with the RPL macro instruction.

If you omit this operand, the ACB field is set to 0.

NIB=nib address

Identifies the NIB whose NAME field indicates the terminal or logical unit that is to be the object of an OPNDST, OPNSEC, REQSESS, TERMSESS, CLSDST, INQUIRE, INTRPRET, CHANGE, or SIMLOGON macro instruction.

Although these macro instructions use a NIB address to indicate a terminal or logical unit, the READ, RECEIVE (OPTCD=SPEC), SEND, RESETSR, TERMSESS, SESSIONC, WRITE, SOLICIT, RESET, and DO macro instructions use a CID to indicate a terminal or logical unit (and INTERPRET and CLSDST, along with some forms of INQUIRE, work either way). CIDs (communication identifiers) are supplied to the application program upon completion of an OPNDST or OPNSEC macro instruction. The CID and the NIB address occupy the same physical field in the control block. ACF/VTAM can distinguish between a NIB address and a CID only through a particular bit set in the field. For this reason, the field is called the NIB field when a NIB address is being inserted into it, and an ARG field when a CID is being inserted into it. When NIB=*address* appears on a CHANGE macro instruction, for example, the bit is set to indicate that the field contains a NIB address. When ARG=(*register*) is coded on a READ macro instruction, for example, the bit is set to indicate that the field contains a CID. (Note that register notation must be used with ARG, since CIDs are not available until program execution.)

The point to remember when dealing with the NIB-ARG field is this: Since only one physical field is involved, always use the NIB keyword to insert a NIB address and always use the ARG keyword to insert a CID. This rule also applies to the GENCB and MODCB macro instructions.

If the NIB operand is coded in an RPL macro for a DO, RESET, SOLICIT, READ, RECEIVE, RESETSR, SEND, SESSIONC, or WRITE request, the request will be completed with an error code.

Format: Expressions involving registers cannot be used with the RPL macro instruction.

If you omit this operand, the NIB field is set to 0.

AREA=data area address

When used by a SIMLOGON, REQSESS, INTRPRET, or a CLSDST with OPTCD= PASS macro instruction, AREA indicates the address of an area containing a logon message.

When used by a SEND, RECEIVE, READ, or WRITE macro instruction, AREA indicates the address of an area in program storage into which data is to be read or from which data is to be written.

When used by an INQUIRE macro instruction, AREA indicates where the data obtained by INQUIRE is to be placed.

When used by a DO macro instruction, AREA contains the address of an LDO.

When used by a RCVCMD macro instruction, AREA contains the address of an area into which a header and an ACF/VTAM network operator message will be placed.

When used by a SENDCMD macro instruction, AREA contains the address of an area containing a header and an ACF/VTAM network operator command.

The AREA field is also set upon return from an OPNSEC or OPNDST (OPTCD= ACQUIRE) macro instruction, indicating the address of a NIB or list of NIBs. The AREA field is not set by the application program before OPNDST or OPNSEC is issued.

Format: Expressions involving registers cannot be used with the RPL macro instruction.

If you omit this operand, the AREA field is set to 0.

AREALEN=data area length

Indicates the length (in bytes) of the data area identified by the AREA operand. The AREALEN operand is meaningful only for input operations or for the INQUIRE macro instruction; ACF/VTAM uses this length to determine whether the data it is placing in the area is too long to fit. For the RECEIVE macro instruction, AREALEN=0 means that no input data area is available.

Format: Expressions involving registers cannot be used with the RPL macro instruction.

If you omit this operand, the AREALEN field is set to 0.

RECLEN=data length

When used by a REQSESS, SIMLOGON or INTRPRET macro instruction, or by a CLSDST macro with the PASS option code, RECLEN indicates the length (in bytes) of a logon message or sequence contained in the area indicated by the AREA operand.

When used by a SEND, SENDCMD, or WRITE macro instruction, RECLEN indicates the length (in bytes) of the data that begins at the address indicated by AREA. RECLEN provides the application program a means of telling ACF/VTAM how much data is to be transferred. Users of SEND should take a particular care to insure that the RECLEN field is not improperly set when the macro is issued. The possible consequence of an excessive RECLEN value is described in the SEND macro instruction under RECLEN.

For RECEIVE and READ operations, the RECLEN *operand* has no meaning; but the 4-byte *field* in the RPL corresponding to RECLEN is set by ACF/VTAM when the input operation is finished to indicate the length of data that ACF/VTAM has just placed into AREA (for READ) or the total length of available data (for RECEIVE). For a conversational WRITE, which includes both an input and an output operation, RECLEN indicates the amount of data to be written. ACF/VTAM will post the length of the incoming data in an RPL field called the ARECLEN field.

When a RECEIVE operation is completed and excess data is available (that is, KEEP is in effect and the message is too long to fit in the input area), RECLEN contains the total length of the message. The application program can reissue the RECEIVE until the value in RECLEN is less than or equal to the value in AREALEN.

The RECLEN field is also set upon return from the SETLOGON macro instruction, indicating the number of logon requests currently queued for the application program. The RECLEN field is not set by the application program before SETLOGON is issued.

When a DO macro instruction for a READ LDO or a READBUF LDO is completed, the RECLEN field indicates the amount of data obtained from the terminal and placed in the data area in the LDO.

When an INQUIRE macro instruction is completed, the RECLEN field indicates the amount of data placed into AREA. If the amount of data is larger than the AREA field, RECLEN indicates the total length of the data. The INQUIRE can be reissued with the correct length specified.

The application program can obtain the value in the RECLEN field by issuing a SHOWCB macro, or it can test the contents of RECLEN against a fixed value with the TESTCB macro instruction. For example:

```
SHOWCB   RPL=(1),AM=VTAM        OBTAIN THIS RPL'S...
         FIELDS=RECLEN,         ...RECLEN FIELD...
         AREA=WORKAREA,         ...AND PLACE IT IN WORKAREA...
         LENGTH=4               ...WHICH IS FOUR BYTES LONG.
```

Format: Expressions involving registers cannot be used with the RPL macro instruction.

If you omit this operand, the RECLEN field is set to 0.

AAREA=alternate data area address

When used by a CLSDST macro instruction with a PASS option code, AAREA indicates the location of an 8-byte area containing the symbolic name of the application program to which a logon request is to be directed. The EBCDIC name should be left-justified and padded to the right with blanks. This name is the same as the name of the application program's APPL entry in the resource definition table.

When used by an INTRPRET macro instruction, AAREA indicates a work area where ACF/VTAM places the interpreted data sequence. See the INTRPRET macro instruction for details.

When used by a WRITE macro instruction with a CONV option code, AAREA indicates an input area in the application program into which data is to be placed. This type of operation is called a conversational write operation and is described in the WRITE macro instruction description.

When used by the DO macro instruction, AAREA indicates the address of the last LDO used.

When used by the REQSESS macro instruction, AAREA must be set to zero.

Format: Expressions involving registers cannot be used with the RPL macro instruction.

If you omit this operand, the AAREA field is set to 0.

AAREALN=alternate data area length

Indicates the length (in bytes) of the data area identified by the AAREA operand. When AAREA is used as an input area for a INTRPRET or conversational WRITE macro instruction, ACF/VTAM uses this length to determine whether the data to be placed there is too long to fit.

Format: Expressions involving registers cannot be used with the RPL macro instruction.

If you omit this operand, the AAREALN field is set to 0.

ECB=event control block address
ECB=<u>INTERNAL</u>

Indicates the location of an event control block (ECB) to be posted by ACF/VTAM when the connection or I/O request associated with this RPL is completed. The ECB can be any fullword of storage aligned on a fullword boundary.

Format: Expressions involving registers cannot be used with the RPL macro instruction.

The ECB field and the EXIT field share the same RPL field. If *asynchronous* handling of the connection or I/O request has been specified (ASY option code in the RPL), the ECB-EXIT field is used in this manner:

- If you specify ECB=*address*, ACF/VTAM uses the field as the address of an external ECB; you check and clear this ECB yourself (with CHECK, for example).
- If you specify EXIT=*address*, ACF/VTAM uses the field as the address of the RPL exit routine, and schedules the routine as indicated below (under EXIT operand).
- If you specify ECB=INTERNAL or specify neither ECB=*address* nor EXIT=*address* ACF/VTAM uses the ECB-EXIT field as an internal ECB; you must issue CHECK for the RPL to check this ECB.

If *synchronous* handling has been specified (SYN option code in the RPL), the ECB-EXIT field is used in this manner:

- If you specify ECB=*address*, ACF/VTAM uses the field as the address of an external ECB; ACF/VTAM checks and clears this ECB itself.
- If you specify EXIT=*address*, ACF/VTAM uses the field as an internal ECB, thus destroying the exit routine address; ACF/VTAM checks and clears this ECB itself.
- If you specify ECB=INTERNAL or specify neither ECB=*address* nor EXIT=*address* (this is the normal procedure for synchronous request handling), ACF/VTAM uses the ECB-EXIT field as an internal ECB; ACF/VTAM checks and clears this ECB itself.

ACF/VTAM clears *internal* ECBs (1) when it begins processing any RPL-based macro and (2) when the RPL is checked. However, ACF/VTAM clears *external* ECBs only when the RPL is checked. (RPL checking is done at request completion by ACF/VTAM for synchronous request handling, and is done by the user issuing CHECK for asynchronous request handling.) Users of external ECBs must therefore be sure that the external ECB is cleared (with CHECK or with assembler instructions) before the next RPL-based macro is issued.

EXIT=rpl exit routine address

Indicates the address of a routine to be scheduled when the request represented by this RPL is completed.

If the SYN option code has been specified, the exit routine is not used; should you specify an address anyway, the address is overwritten before the synchronous request completes. (ACF/VTAM uses the ECB-EXIT field as an internal ECB in this situation—see the ECB operand description above). The RPL exit routine is scheduled only if asychronous handling of the request has been specified.

When the routine receives control, it is passed the address of the RPL in register 1. The RTNCD and FDBK2 fields will indicate the status of the request.

The RTNCD-FDBK2 examination could reveal that the request was completed with a logical or physical error. You should issue CHECK in the RPL exit routine; this will schedule the LERAD or SYNAD exit routines, if appropriate, as well as set the RPL to an inactive state. (LERAD and SYNAD exits are discussed in the EXLST macro instruction description.) Never issue the CHECK in your main program unless you are sure that CHECK will be executed *after* the RPL exit routine is scheduled.

When the RPL exit routine receives control, these general purpose registers contain the following (registers 0 and 2-13 are unpredictable):

Register 1: The address of the RPL associated with the request whose completion has caused the RPL exit routine to be entered.

Register 14: The address in ACF/VTAM to which the RPL exit routine must branch when it is through processing. (For programs running under OS/VS2 in a privileged state, the address is an address in the OS/VS2 dispatcher, not in ACF/VTAM.)

Register 15: The address of the RPL exit routine.

No register save area is provided upon invocation of the RPL exit routine.

If the EXIT operand is specified, the ECB operand must not be specified. (The EXIT field and the ECB field occupy the same field in the RPL.)

BRANCH=YES | NO

For OS/VS2 MVS application programs running in privileged state under a TCB, BRANCH indicates the type of processing to be used when a SEND, RECEIVE, RESETSR, or SESSIONC macro instruction is issued.

YES (OS/VS2 MVS only)

When the macro instruction is issued, ACF/VTAM processes the macro instruction in an optimized high-priority manner. (For OS/VS2 MVS programs running in privileged state under an SRB, rather than under a TCB, the macros are processed in this manner automatically regardless of the actual setting of the BRANCH field.

NO

When the macro instruction is issued, ACF/VTAM does not process the macro instruction in an optimized high-priority manner. For DOS/VS, OS/VS1, and OS/VS2 SVS programs, all requests are handled as though BRANCH=NO had been specified, regardless of the actual setting of the BRANCH field.

SEQNO=sequence number (Record mode only)

Indicates the sequence number of a request or response. When an application program issues a SEND (STYPE=REQ) macro instruction, ACF/VTAM sets the sequence number sent with this request at the completion of the macro. If an application program is to respond to a request, it must set the SEQNO field for the SEND (STYPE=RESP) with the appropriate sequence number to identify the request it is responding to. This field is also set by ACF/VTAM on completion of a RECEIVE macro instruction to identify the number of the request or response that was received.

Format: Specify any decimal value that does not exceed 65535 or specify a register (only the rightmost 2 bytes are used).

Note: *If the logical unit to which the application program is responding is a BSC or local 3270 in record mode, specify any decimal value that does not exceed 255 or specify a register (only the rightmost byte is used).*

POST=SCHED | RESP (Record mode only)

This field is set when the application program sends a data request to a logical unit and requests a definite response. It is ignored for STYPE=RESP or if no response or only an exception response is requested of STYPE=REQ. When POST=SCHED is used (scheduled output) the SEND operation is completed as soon as the output data area is free. The application program must issue a RECEIVE to obtain the response to the request. When

POST=RESP is used (responded output) the send operation is not completed until a response to the request is returned. The response information is posted in the RPL fields of the SEND RPL.

RESPOND=(EX | NEX,FME | NFME,RRN | NRRN | QRESP | NQRESP) (Record mode only)

When a response is sent, the RESPOND field indicates the type of response–positive (NEX) or negative (EX)–and, whether it is response type 1 (FME) or response type 2 (RRN) or both.

When a request is sent, the RESPOND field indicates the *expected* response–definite (NEX) or exception only (EX)–and the type of the expected response–response type 1 (FME) or response type 2 (RRN) or both (FME,RRN).

If the NIB for the responding logical unit specifies PROC=ORDRESP and the request specifies QRESP, the response is returned in order with the normal-flow requests and will satisfy only an outstanding RECEIVE RTYPE=DFSYN macro instruction. If NQRESP is specified in the request or if the NIB specifies PROC=NORDRESP, the requestor receives the response with either a RECEIVE RTYPE=RESP, a RESP exit routine, or an outstanding macro instruction with POST=RESP specified. See the SEND and RECEIVE macro instructions for more information.

CONTROL=(DATA | QEC | RELQ | QC | CANCEL | CHASE | SHUTD | BID | LUS | SDT | SHUTC | CLEAR | STSN | SIGNAL | RTR | RSHUTD | RQR | BIND | UNBIND | SBI | BIS) (Record mode only)

Indicates whether data, data flow control commands and responses, or session control commands and responses are to be sent to a logical unit. Data and data flow control commands (QEC, RELQ, QC, Cancel, Chase, SHUTD, Bid, LUS, RTR, RSHUTD, BIS, SBI, SHUTC, and Signal) are sent with the SEND macro instruction. The session control commands (SDT, RQR, Clear, and STSN) are issued by the SESSIONC macro instruction. Session control responses (BIND, SDT, and STSN) are also sent using the SESSIONC macro instruction. CONTROL=UNBIND is specified in a read-only RPL when the SCIP exit routine is scheduled for an application program acting as the secondary end of a session. The SCIP exit routine is scheduled as a result of a CLSDST macro instruction being issued by a primary application program. See *ACF/VTAM Macro Language Guide* for an explanation of the commands designated by CONTROL.

CHAIN=FIRST | MIDDLE | LAST | ONLY (Record mode only)

This field is set when a message is sent to a logical unit. It denotes the message's relative position within the chain currently being sent. ONLY means that the message is the sole element of the chain.

CHNGDIR=(CMD | NCMD | NREQ) (Record mode only)

This field is set when a request or response is sent to a logical unit. When CMD is set, a Change Direction Command indicator is included in the request or response. When REQ is set, a Change Direction Request indicator is included. (Although ACF/VTAM and certain logical units allow this use of the Change Direction Command indicator, this is not a SNA protocol. This indicator may be used by SNA for other purposes in the future.)

CRYPT=YES|NO (Encrypt/Decrypt Feature only)

Indicates whether data is to be enciphered before it is sent to the logical unit.

When YES is specified in a SEND macro instruction for a session that is capable of cryptography, the data sent to the logical unit is enciphered. If YES is specified for a session that is not capable of cryptography, ACF/VTAM assumes that the sender is using a private (user-defined) form of enciphering and ACF/VTAM sends the data to the logical unit without further enciphering.

When ACF/VTAM receives an enciphered data request, ACF/VTAM sets CRYPT=YES in the RPL specified by the RECEIVE macro instruction. If this is a cryptographic session, ACF/VTAM has already deciphered the data. If this is not a cryptographic session, it is assumed that the application program will decipher the data (private enciphering).

When CRYPT=NO is specified in a SEND macro instruction, it indicates that the data is not to be enciphered by ACF/VTAM. When ACF/VTAM sets CRYPT=NO in a RECEIVE RPL, it indicates that the data received by ACF/VTAM was not sent enciphered.

BRACKET=(BB | NBB ,EB | NEB) (Record mode only)
This field is set when a request is sent to a logical unit. When BB is set, a Begin Bracket indicator is included in the request. When EB is set, an End Bracket indicator is included. Note that both indicators can be included in one message. When chained messages are being sent in a bracket, the Begin Bracket and End Bracket indicator must be included in the first or only message of the last chain. For more information, see the description of these indicators in the sections describing the SEND and RECEIVE macros.

RTYPE=(DFSYN | NDFSYN,DFASY | NDFASY,RESP | NRESP) (Record mode only)
When a RECEIVE macro instruction is issued, the RTYPE field designates the type or types of input eligible to satisfy the macro instruction (only one type can actually satisfy the RECEIVE). When a SEND or RESETSR macro instruction is issued, the RTYPE field indicates the type or types of input for which the logical unit's CA-CS mode is to be switched.

DFSYN
Designates normal-flow requests. These include input data and the Quiesce Complete, Cancel, Chase, Bid, Logical Unit Status, Bracket Initiation Stopped and Ready to Receive commands.

DFASY
Designates expedited-flow requests. These include the Quiesce at End of Chain, Release Quiesce, Shutdown, Request Shutdown, Stop Bracket Initiation Shutdown Complete, and Signal commands.

RESP
Designates normal-flow responses.

Note: *Expedited-flow responses cannot be received by the application program. They are intercepted by ACF/VTAM to post complete SEND macro instructions that send expedited requests.*

STYPE=REQ | RESP (Record mode only)
This field designates the type of output to be sent to a logical unit. The application program uses STYPE=REQ to send a request. STYPE=RESP is used when a response is to be sent. STYPE=REQ must be set when a SESSIONC macro instruction is issued.

SSENSE=0| CPM| STATE | FI| RR (Record mode only)

This field is set when a negative response or Logical Unit Status command is sent to a logical unit. Its purpose is to tell the logical unit the type of error that caused the exception condition. These error types are described in Appendix C.

CPM

Designates a request header error condition.

STATE

Designates a state error condition.

FI

Designates a request error condition.

RR

Designates a request reject condition.

If this operand is omitted, the SSENSEO field is set to 0.

Note: *When an RPL is assembled or generated, and each time the RPL is reset to its inactive state (that is, after each synchronous request with OPTCD=SYN or CHECK macro instruction), the SSENSEO field is cleared.*

SSENSMO=system sense modifier value (Record mode only)

This field is set when a negative response or a Logical Unit Status command is sent to a logical unit. The value set in this field is used in conjunction with the SSENSEO setting to describe the specific type of error that caused the exception condition. The meanings assigned to the SSENSMO values are described in Appendix C. If this operand is omitted, the SSENSMO field is set to 0.

Format: Specify any decimal value defined in Appendix C, specify a register (only the rightmost byte is used), or specify a 1-byte hexadecimal constant.

Examples: SSENSMO=1
SSENSMO=(7)
SSENSMO=X'1B'

Note: *When an RPL is assembled or generated, and each time the RPL is reset to its inactive state (that is, after each synchronous request with OPTCD=SYN or CHECK macro instruction), the SSENSMO field is set to 0.*

USENSEO=user sense value (Record mode only)

This field may be set when a negative response or Logical Unit Status command is sent to a logical unit. The user sense field is user-defined and may be used to inform the logical unit that an exception condition is being raised by an application-program-related error that is not a SNA defined error or it can be used to further modify the SNA defined system sense and system sense modifier values. See Appendix C for more information. If this operand is omitted, the USENSEO field is set to 0.

Format: Specify any decimal value that does not exceed 65535, specify a register (only the rightmost 2 bytes are used), or specify a 2-byte hexadecimal or character constant.

Examples: USENSEO=13
USENSEO=(7)
USENSEO=X'4F4F'
USENSEO=C'ZZ'

Note: *When the RPL is assembled or generated, and each time the RPL is reset to its inactive state (that is, after each synchronous request with OPTCD=SYN or CHECK macro instruction), the USENSEO field is set to 0.*

IBSQAC=SET | TESTSET | INVALID | IGNORE (Record mode only)
OBSQAC=SET | TESTSET | INVALID | IGNORE (Record mode only)

These fields are used by a SESSIONC macro instruction to designate which type of Set and Test Sequence Number command is being sent to a logical unit. The setting of the IBSQAC field relates to the inbound sequence number; the OBSQAC field relates to the outbound sequence number. See the SESSIONC macro instruction for the responses that can be returned for each of the following:

SET
The sequence number is reset. The logical unit is made aware of the number, but possible responses are limited.

TESTSET
The sequence number is reset. The logical unit is made aware of the number and returns a response regarding the validity of that number.

INVALID
The sequence number is not reset (the application program has lost its version of the sequence number). The logical unit returns the sequence number.

IGNORE
The sequence number is not reset. No response is possible.

IBSQVAL=inbound sequence number (Record mode only)
OBSQVAL=outbound sequence number (Record mode only)

When SESSIONC is used to send an STSN command and SET or TESTSET is set in the IBSQAC or OBSQAC field, these fields contain the sequence number being reset or transmitted.

Format: With the exception of a BSC or local 3270, specify any decimal value that does not exceed 65535, any hexadecimal value that does not exceed FFFF, or specify a register (only the rightmost 2 bytes are used). For a BSC or local 3270, specify any decimal value that does not exceed 255 or specify a register (only the rightmost byte is used).

If this operand is omitted, this field is set to 0.

SIGDATA=signal data (Record mode only)

When the SEND macro is used to send the SIGNAL command to a logical unit, this field contains the signal data to be sent.

Format: Specify a decimal, hexadecimal, or character constant of from 1 to 4 bytes, or specify a register (the value in the register is used).

If this operand is omitted, this field is set to 0.

CODESEL=STANDARD| ALT (Record mode only)

This field indicates which data code is to be used in the request associated with the RPL. The application program and logical unit must have previously agreed what type of code will be recognized as the standard code (such as EBCDIC) and what code will be recognized as the alternate code (such as ASCII).

STANDARD
Indicates that the standard code agreed on is to be used.

ALT
Indicates that the alternate code agreed on is to be used.

OPTCD=option code| (option code, . . .)

Indicates options that are to affect the connection and I/O requests made using this RPL.

Format: Code as indicated in the assembler format table. If only one option code is specified, the parentheses can be omitted.

```
RPL     ACB=ACB1,OPTCD=(SPEC,SYN,CS),AM=VTAM
RPL     ACB=ACB1,OPTCD=SPEC,AM=VTAM
```

Note: *The MODCB macro instruction can be used to change the option codes set in the RPL after it has been built.*

NIBTK| TRUNC| KEEP (Record mode only)
Indicates the action to be taken when a RECEIVE macro instruction is completed with input that is too large to fit in the input data area. TRUNC causes the excess data to be discarded. The application program is not notified that truncation occurred. KEEP causes the excess data to be saved for subsequent RECEIVE macro instructions. The application program can compare the value set in the RPL's RECLEN field (the amount of incoming data) with the value in the AREALEN field. If the RECLEN field is larger, excess data is present. NIBTK allows the TRUNC-KEEP processing option (see the NIB macro instruction) to determine whether excess data is to be kept or discarded.

NFMHDR| FMHDR (Record mode only)
This option code indicates to ACF/VTAM how the format bit in the request header (RH) is to be set. This option applies only to data requests and data responses and should be used to notify the logical unit that the request or response contains or does not contain (FMHDR and NFMHDR, respectively) a user-defined function management header. If FMHDR is set, the format bit is set on in the request header and is delivered to the receiver.

CONALL| CONANY
When an OPNDST macro instruction (with an ACQUIRE option) is issued and the NIB field of its RPL indicates a list of NIBs, this option code indicates the following:

CONALL
Connection is to be made to *all* the available terminals and logical units in the list. The connections are made immediately.

CONANY
Connection is to be made to the first available terminal or logical unit (if any) of the NIB list indicated by the NIB field. The request is completed when one connection has been made.

When a SIMLOGON macro instruction is issued and the NIB field of its RPL contains the address of a list of NIBs, this option code indicates the following:

CONALL
Logons are to be generated for *all* the terminals and logical units represented in the NIB list. The SIMLOGON operation is completed immediately. If Q is set, logons are generated as each terminal or logical unit becomes available. If NQ is set and all the terminals and logical units are available, the logons are generated immediately; if all are not available, however, *no* logons are generated.

CONANY
A simulated logon is to be generated for the first available terminal or logical unit of the NIB list. Control is passed to the application program's LOGON exit routine, if one exists, when this one logon has been generated. The parameter list passed to the LOGON exit routine can be used to determine the identity of the terminal or logical unit for which the logon was generated. (See the EXLST macro instruction description.) If Q is set, a logon is generated when the first terminal or logical unit becomes available. If NQ is set, and a terminal or logical unit is available, the logon is generated immediately. If no terminals or logical units are available, a logon is not generated.

ACCEPT | ACQUIRE
Indicates whether OPNDST is being issued to accept a terminal's or logical unit's logon or whether it is being issued to acquire that terminal or logical unit.

ACCEPT
ACF/VTAM connects the application program to a terminal or logical unit that has issued a logon. If the ANY option code is set and more than one terminal or logical unit has issued a logon and is waiting to be accepted, the first one that issued a logon is connected. The symbolic name of that terminal or logical unit is placed in the NIB pointed to be OPNDST's RPL. If the SPEC option code is in effect, the NIB must *already* contain the symbolic name of a terminal or logical unit; connection is established only if that particular terminal or logical unit issues a logon.

ACQUIRE
ACF/VTAM connects the application program to the terminal or logical unit represented by this NIB if it is available (that is, not connected to an application program or does not have a pending logon). The CONALL-CONANY option code determines which of the terminals or logical units represented in the list (that have not issued logons) are connected. If CONALL is in effect, all of the available terminals and logical units represented in the list are connected. If CONANY is in effect instead, only the first available terminal or logical unit represented in that list is connected.

The use of ACQUIRE must be authorized for the application program by the user.

SPEC | ANY
When the RPL is used by an OPNDST macro with an ACCEPT option code, these option codes indicate the following:

SPEC
Connection is to be made to a specific terminal or logical unit if it issues (or has issued) a logon to the application program. The terminal or logical unit is identified by placing its symbolic name in a NIBand placing the address of that NIB in the RPL's NIB field.

ANY

Connection is to be made to any terminal or logical unit that has issued a logon for the application program.

When the RPL is used by a READ, SOLICIT, or RECEIVE macro instruction, these option codes indicate the following:

SPEC

Data is to be obtained from the specific terminal or logical unit whose session CID is in the RPL's ARG field.

ANY

For READ, data already obtained from any one terminal is to be moved to the application program's input area, subject to the setting of the terminal's CS-CA option code. For SOLICIT, data is to be obtained from all of the terminals connected to the application program, subject to the setting of the CS-CA option code. For RECEIVE, data arriving from any one logical unit is to be moved to the application program's input area, subject to the setting of the logical unit's CS-CA option code and the RTYPE field of the RECEIVE macro instruction.

QUIESCE | STOP | START

Indicates how a SETLOGON request is to affect (1) the queuing of logons for a given ACB and (2) the codes returned by INQUIRE (OPTCD=APPSTAT) issued by other application programs. This option code applies only if the ACB has been opened with MACRF=LOGON specified.

QUIESCE

No more logons can be directed at the ACB whose address is in the RPL's ACB field. Application programs issuing INQUIRE (OPTCD=APPSTAT) for the application program will receive a return code indicating that the application program cannot accept logon requests, presumably because it is about to close the ACB.

STOP

Application programs issuing INQUIRE (OPTCD=APPSTAT) for the ACB receive a return code indicating that no logons should be directed at the ACB (but implying that logons will be accepted later). The use of this option, however, does not prevent logons from being queued if the other application programs ignore this indicator and issue CLSDST (OPTCD=PASS) anyway. SETLOGON (OPTCD=STOP) should be used to temporarily halt logons; use SETLOGON (OPTCD=QUIESCE) to permanently bar logons to the ACB.

START

Application programs issuing INQUIRE (OPTCD=APPSTAT) receive a return code indicating that the application program represented by the ACB is accepting logons. This version of SETLOGON also causes ACF/VTAM to commence queuing automatic logon requests if this is the first such SETLOGON request since the ACB was opened. SETLOGON (OPTCD=START) reverses the effect of a previous SETLOGON (OPTCD=STOP).

RELEASE | PASS

Indicates whether or not a logon is to be generated when a CLSDST macro instruction is issued.

RELEASE
No logon is generated; the terminal or device-type logical unit is simply disconnected from the application program.

PASS
ACF/VTAM generates a simulated logon on behalf of the terminal or logical unit being disconnected and directs this logon to the application program whose symbolic name is pointed to by the RPL's AAREA field. If the RPL's AREALEN field contains a value other than 0, ACF/VTAM also sends a logon message with the logon. ACF/VTAM obtains the message from the storage area identified in the AREA field, and sends the number of bytes indicated in the AREALEN field. The use of CLSDST with PASS must be authorized by the user.

LOGONMSG | DEVCHAR | COUNTS | TERMS | APPSTAT | CIDXLATE |
TOPLOGON | BSCID | SESSPARM | SESSKEY
Indicates the action ACF/VTAM is to take when an INQUIRE macro instruction is issued.

LOGONMSG
INQUIRE retrieves the logon message of a terminal that has issued a logon for the application program.

The RPL's NIB field must point to a NIB whose NAME field contains the symbolic name of the terminal. The RPL's ACB field must indicate the ACB to which the logon was directed. This information is provided in the parameter list passed to the LOGON exit routine.

The AREA and AREALEN fields must indicate the location and length of the storage area where the logon message is to be placed.

DEVCHAR
INQUIRE obtains the device characteristics of a terminal, as they are defined by the user in the resource definition table at the time INQUIRE is executed. These device characteristics can be used by the application program to determine which processing options the program wants to set in the NIB used to connect the terminal.

The RPL's NIB field must point to a NIB containing the symbolic name of the terminal, or the RPL's ARG field must contain the CID of the session with the terminal (see the description of the NIB field for more information on the NIB-ARG field). The device characteristics are placed in the program storage area whose location and length are indicated by the AREA and AREALEN fields of the RPL. See the INQUIRE macro instruction for details.

COUNTS
For the ACB specified, INQUIRE provides the number of active sessions for the application program (both primary and secondary) and the number of queued logons (for primary ends) and the number of pending Binds (for secondary ends) that are waiting to be processed. These two numbers are placed in a 4-byte area in program storage whose location and length are indicated by the AREA and AREALEN fields of the RPL. ACF/VTAM places the number of connected sessions in the first 2 bytes and the number pending sessions in the second 2 bytes.

The connections and logons counted by INQUIRE are those directed to the ACB indicated by the ACB field.

TERMS

When this operand is specified, node initialization blocks (NIBs) are built by INQUIRE.

The RPL's NIB field must point to a NIB whose NAME field contains the name of an entry that exists in the resource definition table at the time INQUIRE is issued. This entry must be a PU, LU, LINE, CLUSTER, or TERMINAL entry that represents several terminals or logical units. A NIB is built for each terminal or logical unit represented in the entry.

Each generated NIB contains the symbolic name of the terminal or logical unit. The flags for the LISTEND field are set to group the NIBs together into a NIB list. In addition, device characteristics are supplied in the DEVCHAR field of each NIB. These characteristics can be used to reset the processing options of the NIB to values that are appropriate for the terminal.

The user must set each NIB's MODE field to BASIC or RECORD before the NIBs are ready to be used for connection.

APPSTAT

This type of INQUIRE determines whether a given application program is available or unavailable. An available application program is one whose ACB is active (open) and indicates that logons are to be accepted (OPEN with MACRF=LOGON and SETLOGON with OPTCD=START or STOP have been issued).

The RPL's NIB field must point to a NIB whose NAME field contains the symbolic name of the *application program* whose status is being checked. A value returned in the RPL's FDBK field indicates whether the application program is available or not. See the INQUIRE macro instruction description for the codes that can be returned.

CIDXLATE

INQUIRE provides the symbolic name of the terminal or logical unit whose session CID you provide, or provides the CID of the session with the terminal or logical unit whose symbolic name you provide.

If the RPL's ARG field contains the CID of the session, the 8-byte symbolic name is returned in the data area indicated in the AREA field. If the RPL's NIB field contains the address of a NIB, the CID for the session is placed in the RPL's ARG field, which replaces the NIB field.

TOPLOGON

For a given ACB, INQUIRE provides the symbolic name of the terminal or logical unit that is currently at the top of the logon queue queue for that ACB (that is, the terminal or logical unit that has spent the greatest amount of time waiting for its logon to be satisfied).

The RPL's ACB field must indicate the ACB whose logon queue is to be used. The 8-byte symbolic name of the terminal or logical unit is returned in the data area indicated in the RPL's AREA field.

BSCID

INQUIRE returns the ID verification sequence of the terminal logging on. This form of INQUIRE is appropriate if the terminal's name (as provided in the LOGON exit routine's parameter list) is one of the names established during ACF/VTAM definition as an unidentified terminal with an ID verification feature.

The RPL's NIB field must point to a NIB whose NAME field contains the symbolic name provided in the LOGON parameter list. The sequence is placed in the work area defined by the AREA and AREALEN fields (set AREALEN to 20).

SESSPARM
INQUIRE returns the session parameters associated with a specified logon mode. The NIB field of the RPL must point to a NIB whose LOGMODE field identifies the logon mode to be used. The logon mode name that is specified in the NIB is used to search the logon mode table defined for the logical unit named in the NIB. If a match is found, the session parameters associated with the logon mode name are returned in the field pointed to by the AREA field of the RPL. INQUIRE may also be used to obtain the session parameters and logon data associated with a pending logon. The session parameters for the default logon mode may also be returned for the logical unit. See the description of the LOGMODE operand of the NIB macro for more information.

SESSKEY (Encrypt/Decrypt Feature only)
INQUIRE returns a 16 byte value pointed to by the AREA field. The first 8 bytes contain the enciphered cryptographic session key. The second eight bytes contain the Initial Chaining Value (ICV) that will be used to encipher the data sent to the logical unit.

SYN | ASY
Indicates whether ACF/VTAM should synchronously or asychronously handle any request made using this RPL.

SYN
Synchronous handling means that when a request is made, control is not returned to the application program until the requested operation has been completed (successfully or otherwise). The application program should not use the CHECK macro instruction for synchronous requests; ACF/VTAM automatically performs this checking (which includes clearing the internal ECB; an ECB address or an exit routine address should not be specified in the RPL or an RPL-based macro instruction should specify ECB=INTERNAL). When control is returned to the application program, registers 0 and 15 will contain completion codes.

ASY
Asynchronous handling means that after ACF/VTAM schedules the requested operation, control is immediately passed back to the application program. When the event has been completed, ACF/VTAM does one of the following:

- If the ECB address is specified for the RPL, ACF/VTAM posts a completion indicator in the event control block indicated by this operand. The application program must issue a CHECK (or a system WAIT) macro to determine whether the

ECB has been posted. If the ECB-EXIT field is not explicitly specified or an internal ECB is specified, the application program must also issue a CHECK macro instruction to check this ECB.

- If the EXIT operand is in effect for the RPL, ACF/VTAM schedules the exit routine indicated by this operand. This exit routine should issue the CHECK macro so that the RPL can be reused, and also to cause automatic entry into a LERAD or SYNAD exit routine if the requested operation ends with a logical or other error. CHECK should be issued in the exit routine if the application program has no LERAD or SYNAD routine, since CHECK will return a code indicating whether or not a logical or other error occurred.

Note: *After an asynchronous request has been accepted and before that request has been completed, do not modify the RPL being used by the request. This restriction also applies to a NIB during OPNDST processing. A modification during this interval could cause ACF/VTAM to be unable to complete the request in a normal manner, which in turn would cause ACF/VTAM to terminate the application program.*

CA | CS

The CS (continue specific) and CA (continue any) option codes determine which type of input request is required to obtain data from the terminal or logical unit.

CA

Places the terminal or logical unit in a status wherein it's data is subject to RECEIVE or READ and SOLICIT macro instructions. This status is termed *continue-any mode.*

Although the CS-CA option code affects only RECEIVE, SOLICIT, or READ operations, you can switch a terminal or logical unit from one status to the other by specifying the CS or CA option code in any OPNDST, OPNSEC, SEND, RECEIVE, RESETSR, SOLICIT, READ, WRITE, DO, or RESET macro instruction. The change from one status to another is effective for the *next* I/O operation directed at the terminal or logical unit, not when this macro instruction is executed. The terminal or logical unit that is the object of the macro instruction is the one whose CS-CA status is changed. (For RECEIVE or READ with OPTCD=ANY, the terminal or logical unit whose status will be changed is the one whose data is moved by the READ or RECEIVE operation.) If an error occurs and a macro instruction that specifies a change in a terminal's or logical unit's CA-CS mode is not completed successfully, the mode is not changed.

CS

Places the terminal or logical unit into a status wherein only input requests that are directed *specifically* at the terminal or logical unit can be used to obtain data from it. These are the RECEIVE, READ, and SOLICIT macro instructions with OPTCD=SPEC specified. Looking at CS another way, it "immunizes" a terminal or logical unit from input requests that are not *specifically* directed at the terminal or logical unit—namely, RECEIVE, READ, or SOLICIT macro instructions issued with OPTCD=ANY. The status into which the terminal or logical unit is placed is termed *continue-specific mode.*

For example, while CS is in effect, the arrival of data from a logical unit that is in continue-specific mode does not trigger the completion of a RECEIVE (OPTCD=ANY) macro instruction that may have already been issued.

Continue-any and continue-specific modes can be set individually for a particular type of input. For example, a terminal or logical unit can be placed in continue-specific mode for normal-flow requests while it is in continue-any mode for expedited-flow requests and for responses.

BLK | LBM | LBT (Basic mode only)
Indicates that the block of data to be transferred on a WRITE operation represents a block (BLK), the last block of a message (LBM), or the last block of a transmission (LBT). Appendix B shows the line-control characters sent when each of these three option codes are in effect. BLK is invalid for a 3270 Information Display System.

NCONV | CONV (Basic mode only)
Indicates whether or not a WRITE macro instruction is to be handled as a conversational write request.

NCONV
Only the output operation is performed.

CONV
Following the output operation, data is obtained from the terminal and placed in the area in program storage indicated by the RPL's AAREA field.

COND | UNCOND | LOCK
Indicates the action to be taken when a RESET or TERMSESS macro instruction is issued.

COND
RESET cancels any I/O operation that is pending for a specific terminal, but does not affect an I/O operation if data transfer has begun. This form of RESET cannot be used if an error lock is set.

If TERMSESS specifies OPTCD=COND, the application program acting as the primary end of the session determines if and when to terminate the session.

UNCOND
RESET cancels any I/O operation with a specific terminal, whether or not data transfer has begun. Any data that has already been brought into ACF/VTAM buffers is kept by ACF/VTAM for subsequent retrieval by the application program (with a READ macro). Any data being sent or about to be sent by the terminal may be lost. RESET also resets any error lock that has been set for the terminal.

If TERMSESS specifies OPTCD=UNCOND, ACF/VTAM will terminate the session.

LOCK (Basic mode only)
RESET resets any error lock that has been set for the terminal.

NERASE | ERASE | EAU (Basic mode only)
Indicates the action to be taken when a WRITE macro instruction is issued.

NERASE
WRITE performs an ordinary write operation with no display screen erasure. Use this option for all devices other than 3270 and 2770 devices.

ERASE
WRITE erases the screen of a display device attached to a 3270 Information Display System or a 2770 Data Communication System, and then sends a block of data to the device.

EAU
WRITE erases only the unprotected portion of the screen of a display device attached to a 3270 Information Display System. No data is written.

RELRQ | NRELRQ

Indicates the action to be taken when a SIMLOGON macro is issued, and the terminal or logical unit that is the object of this simulated logon request is already connected to another application program—that is, already connected to an ACB other than the one being used for the SIMLOGON macro.

The effect of this option is to determine whether or not the application program that is connected to the terminal or logical unit is to be notified of your request. The NRELRQ option, for example, allows you to release a terminal or logical unit to another application program, and then immediately request reconnection to assure its eventual return to your program without notifying the receiving application program.

Note the difference in spelling between the RELRQ-NRELRQ RPL option, and the related exit routine. The latter is coded in the EXLST macro instruction as RELREQ.

RELRQ

If the application program to which the terminal or logical unit is connected has a RELREQ exit routine, that routine is invoked.

NRELRQ

No RELREQ exit routine is invoked.

Q | NQ

Indicates the action ACF/VTAM is to take when the application program issues SIMLOGON, REQSESS, or OPNDST (ACCEPT) and the terminal or logical unit that is the object of this request is unavailable.

Q

For SIMLOGON, ACF/VTAM is to schedule the LOGON exit routine when the terminal or logical unit is finally available and complete the SIMLOGON request when it has done so. For OPNDST with ACCEPT, ACF/VTAM completes the OPNDST when the terminal or logical unit logs on to this application program. If a logon is already queued, the OPNDST is completed immediately. Q cannot be specified in a REQSESS macro instruction.

Note: *If during processing of the OPNDST (ACCEPT) request, an error is detected and error recovery processing is invoked, the pending logon may be canceled.*

NQ

ACF/VTAM is to immediately return control to the application program. (Without the NQ option, a connection request or simulated logon might remain pending indefinitely, until another application program releases the terminal or logical unit.) NQ must be specified when issuing a REQSESS macro instruction.

The Q-NQ option also indicates the action ACF/VTAM is to take when the application program issues a RECEIVE or RCVCMD macro instruction and no input that is eligible to satisfy the request is at that moment in ACF/VTAM's buffers.

Q

ACF/VTAM is to satisfy the request when the input is finally available and complete the RECEIVE or RCVCMD when it has done so.

NQ

ACF/VTAM is to terminate the request and return control to the application program immediately without performing any CA-CS mode switching.

RPL Fields Set by ACF/VTAM

All of the RPL fields described above are fields that can be supplied by the application program and cause the RPL fields to be set when the RPL macro is assembled or when the RPL-based macro is executed. Some of the fields described above that are initially set by the application program may be (for certain macro instructions) reset by ACF/VTAM before the macro instruction is completed. There are additional RPL fields that cannot be set by the application program but can be examined by it during program execution. ACF/VTAM uses both types of fields to return information to the application program upon completion of RPL-based macro instruction processing. (See Figure 16 for a description of these fields.)

In some cases, fields set by ACF/VTAM prior to the completion of one macro;instruction will cause erroneous results if the application reuses the same RPL for another macro without again initializing the field. (Only the SSENSEI, SSENSMI, USENSEI, SSENSEO, SSENSMO, USENSEO, FDBK, FDBK2, RTNCD, and SENSE fields are cleared by ACF/VTAM, and no fields are reset to their original values by ACF/VTAM.)

For example: Before a RECEIVE is issued, the RTYPE field is set by the application program to indicate the types of input (DFSYN, DFASY, RESP) that are eligible to satisfy the RECEIVE. The application program might indicate all 3. When the RECEIVE is completed, ACF/VTAM uses the same field to indicate the type of input that actually satisfied the RECEIVE; if a RESP response was received, for instance, ACF/VTAM would reset the RTYPE field to RTYPE=(NDFSYN, NDFASY, RESP). Should the application program issue another RECEIVE with the same RPL and fail to reset the RTYPE field to its intended setting, the second RECEIVE could only receive responses.

RPL
Field Name **Content**

ARECLEN The number of bytes of data returned by the WRITE (OPTCD=CONV) and INTRPRET macro instructions. See WRITE and INTRPRET for details.

RTNCD A general return code returned by all of the RPL-based macro instructions. This field is cleared by ACF/VTAM when the processing of the macro instruction begins. This is one of the feedback fields described in Appendix C.

FDBK2 A specific error return code returned by all RPL-based macro instructions that are accepted by ACF/VTAM but are not completed successfully. This field is cleared by ACF/VTAM when the processing of the macro instruction begins. This is one of the feedback fields described in Appendix C. A DSECT containing labeled EQU instructions for each FDBK2 return code is described in Appendix H (ISTUSFBC). These DSECT labels can be used instead of the numerical values that are cited for FDBK2 throughout this manual.

FDBK Status information for INQUIRE, READ, conversational WRITE, or DO macro instructions. For example, if the data ended with an EOM line-control character, this field is set to indicate this. This field is cleared by ACF/VTAM when the processing of the macro instruction begins. This is one of the feedback fields described in Appendix C.

SENSE The SENSE field contains status or sense bytes obtained from certain devices. The SENSE field applies only to DO, READ, and WRITE macro instructions, and is set following these macro instructions only if the RPL's FDBK2 field so indicates. This field is cleared by ACF/VTAM when the processing of the macro instruction begins. There is more information about the SENSE field in Appendix C.

RPL
Field Name **Content**

REQ

A value returned by all RPL-based macro instructions except EXECRPL (and CHECK) that identifies the type of macro instruction. This field shows which type of macro instruction last used the RPL. These are the values that are set:

Value Hex	(Dec)	Macro Instruction
11	(17)	WRITE
12	(18)	RESET
13	(19)	DO
15	(21)	SETLOGON
16	(22)	SIMLOGON
17	(23)	OPNDST
19	(25)	CHANGE
1A	(26)	INQUIRE
1B	(27)	INTRPRET
1D	(29)	READ
1E	(30)	SOLICIT
1F	(31)	CLSDST
22	(34)	SEND
23	(35)	RECEIVE
24	(36)	RESETSR
25	(37)	SESSIONC
27	(39)	SENDCMD
28	(40)	RCVCMD
29	(41)	REQSESS
2A	(42)	OPNSEC
2C	(44)	TERMSESS

USER

Upon the completion of a SEND, RECEIVE, SESSIONC, READ, WRITE, SOLICIT, RESET, or DO macro instruction, this field contains whatever value you previously placed in the USERFLD field of the NIB used to connect the terminal. See the description of the USERFLD operand of the NIB macro instruction for more information.

ARG

An identifier for the communication session (CID) is provided by OPNDST or OPNSEC when the session is established. The CID is a 32-bit value. It is generated by ACF/VTAM when the terminal or logical unit is connected to the application program, and is used by the application program to indicate the identity of the terminals or logical units for subsequent I/O requests. More information about the CID and its use appears above in the description of the NIB operand of this macro instruction.

ECB/EXIT

If this field is used as an internal ECB (that is, if neither ECB or EXIT is specified or if an RPL-based macro If synchronous requests are issued (OPTCD=SYN) and EXIT is specified, ACF/VTAM ignores the address specified and uses this field as an internal ECB.

AREA

After an OPNDST or OPNSEC macro instruction is issued, AREA is set to the address of a NIB or a list of NIBs. (The NIB field is replaced by the CID.) If the RPL for the OPNDST is to be reused for subsequent I/O operations, the AREA field must be reset to indicate the data area to be used for the I/O operation.

RPL Field Name	Content
AAREA	After a DO macro instruction is completed, the AAREA field is set to the address of the last LDO.
RECLEN	After an INQUIRE macro instruction is completed RECLEN contains the length of the requested information (such as the logon message). After a SETLOGON macro instruction is completed, RECLEN contains the number of logon requests already queued for the application program. After a READ, DO, or RCVCMD macro instruction is completed, RECLEN contains the amount of input data. After a RECEIVE, RECLEN contains the total length of data in ACF/VTAM's buffers plus the length of data already moved by that RECEIVE macro instruction. This value may be greater than AREALEN, indicating the presence of excess data (the value in RECLEN represents the total length of excess data plus the data in AREA).
CONTROL	After a RECEIVE macro instruction (RTYPE=DFSYN) is completed, CONTROL is set to one of the following values:

CONTROL=DATA	(Data message received)
CONTROL=QC	(Quiesce Complete command received)
CONTROL=CANCEL	(Cancel command received)
CONTROL=CHASE	(Chase command received)
CONTROL=LUS	(Logical Unit Status command received; check SSENSEI, SSENSMI, and USENSEI)
CONTROL=BID	(Bid command received)
CONTROL=RTR	(Ready to Receive command received)
CONTROL=BIS	(Bracket Initiation Stopped command received)

After a RECEIVE macro instruction (RTYPE=DFASY) is completed, CONTROL is set to one of the following values:

CONTROL=QEC	(Quiesce at End of Chain command received)
CONTROL=RELQ	(Release Quiesce command received)
CONTROL=SHUTC	(Shutdown Complete command received)
CONTROL=RSHUTD	(Request Shutdown command received)
CONTROL=SIGNAL	(Signal command received; check SIGDATA)
CONTROL=SHUTD	(Shutdown command received)
CONTROL=SBI	(Stop Bracket Initiation command received)
CONTROL=SDT	(Start Data Traffic command received; secondary application program)

After a SCIP exit routine is entered, the CONTROL field of the read-only RPL is set to the following value:

CONTROL=RQR	(Request Recovery command received; primary application program only)
CONTROL=CLEAR	(Clear command received; secondary application program only)
CONTROL=STSN	(Set and Test Sequence Number command received)
CONTROL=BIND	(Bind command received; secondary application program only)
CONTROL=UNBIND	(Unbind command received; secondary application program only)

RPL
Field Name **Content**

SEQNO

When a SEND (POST=RESP) or a RECEIVE macro instruction has received a response, the SEQNO field contains the sequence number of the request being responded to. When a SEND (POST=SCHED) is used to send a request (STYPE=REQ), the SEQNO field contains the ACF/VTAM-supplied sequence number of the request.

RESPOND

When a SEND (POST=RESP) or a RECEIVE macro instruction has received a response, the RESPOND field indicates (1) whether the response is positive (NEX) or negative (EX), (2) the type of the response–response type 1 (FME), response type 2 (RRN), or both (FME, RRN), or (3) whether the response was queued with incoming normal-flow requests (QRESP) or with other responses (NQRESP). When a RECEIVE macro instruction has received a request, the RESPOND field indicates (1) the expected response–definite (NEX) or exception (EX), (2) the type of the expected response–response type 1 (FME), response type 2 (RRN), or both (FME, RRN); or (3) whether the requestor expects the response to be returned with normal-flow requests (QRESP) or returned with other responses (NQRESP).

CHAIN

When a RECEIVE (RTYPE=DFSYN) macro instruction has received a message, the CHAIN field indicates the message's relative position within the chain. The possible settings are CHAIN=FIRST, CHAIN=MIDDLE, CHAIN=LAST, and CHAIN=ONLY.

CHNGDIR

When a request or response is received, the CHNGDIR field indicates the presence of change-direction indicators. The possible CHNGDIR settings are:

CHNGDIR=(NCMD,REQ)	(Change Direction Request indicator present–DFASY or RESP only)
CHNGDIR=(CMD,NREQ)	(Change Direction Command indicator present–DFSYN only)
CHNGDIR=(NCMD,NREQ)	(neither indicator present)

BRACKET

When a request is received, the BRACKET field indicates the presense of bracket indicators. The possible BRACKET settings are:

BRACKET=(BB,EB)	(Begin Bracket and End Bracket indicators both present)
BRACKET=(NBB,EB)	(End Bracket indicator present)
BRACKET=(BB,NBB)	(Begin Bracket indicator present)
BRACKET=(NBB,NEB)	(neither indicator present)

RTYPE

When a RECEIVE macro instruction is completed, the RTYPE field indicates the type of input that caused the completion. The possible RTYPE field settings are:

RTYPE=DFSYN	(data or other normal-flow request received)
RTYPE=DFASY	(expedited-flow request received)
RTYPE=RESP	(RESP response received)
TYPE=DFSYN,RESP	(DFSYN response received)

SSENSEI

When a SEND (POST=RESP), RECEIVE, or SESSIONC macro instruction receives an exception message or response, the SSENSEI field indicates the presence of a system sense error code. The SSENSEI field may also contain a system sense error code upon completion of an OPNDST, REQSESS, or TERMSESS for a logical unit. This field is

RPL Field Name **Content**

cleared by ACF/VTAM when the processing of the macro instruction begins. These codes are described in Appendix C. Possible SSENSEI settings are:

SSENSEI=PATH	(unrecoverable path error condition)
SSENSEI=CPM	(request header error condition)
SSENSEI=STATE	(state error condition)
SSENSEI=FI	(request error condition)
SSENSEI=RR	(request reject condition)
SSENSEI=0	(no system sense error code)

SSENSMI When a SEND (POST=RESP), RECEIVE, or SESSIONC macro instruction receives an exception message or response, the SSENSMI field indicates the presence of a system sense modifier value. The SSENSMI field may also contain a system sense modifier value upon completion of an OPNDST, REQSESS, or TERMSESS for a logical unit. The modifier values are described in Appendix C. The value is tested as a 1-byte quantity. If SHOWCB is used, the value is right-adjusted in the 4-byte work area; the other 3 bytes are set to 0. This field is cleared by ACF/VTAM when the processing of the macro instruction begins.

USENSEI When a SEND (POST=RESP), RECEIVE, or SESSIONC macro instruction receives an exception message or response, the USENSEI field may contain a user sense value. The USENSEI field may also contain a user sense value upon completion of an OPNDST, REQSESS, or TERMSESS for a logical unit. This value is tested as a 2-byte quantity. If SHOWCB is used, the value is right-adjusted in the 4-byte work area; the other 2 bytes are set to 0. This field is cleared by ACF/VTAM when the processing of the macro instruction begins.

SSENSEO This field is always set to 0 when an RPL-based macro is completed.

SSENSMO This field is always set to 0 when an RPL-based macro is completed.

USENSEO This field is always set to 0 when an RPL-based macro is completed.

IBSQAC When a SESSIONC macro instruction (CONTROL=STSN) is completed, the IBSQAC field contains the logical unit's response regarding the inbound sequence number. Possible settings are TESTPOS, TESTNEG, INVALID, and RESET. See the SESSIONC macro instruction for more information.

OBSQAC When a SESSIONC macro instruction (CONTROL=STSN) is completed, the OBSQAC field contains the logical unit's response regarding the outbound sequence number. The possible settings for OBSQAC are the same as those for IBSQAC.

IBSQVAL When a SESSIONC macro instruction (CONTROL=STSN) is completed and IBSQAC is set to TESTPOS or TESTNEG, the IBSQVAL field contains the logical unit's version of the inbound sequence number.

OBSQVAL When a SESSIONC macro instruction (CONTROL=STSN) is completed and OBSQAC is set TESTPOS or TESTNEG, the OBSQVAL field contains the logical unit's version of the outbound sequence number.

SIGDATA When a Signal command is received, the SIGDATA field contains the signal information sent by the logical unit. The value in this field is tested as a 4-byte quantity.

RPL
Field Name **Content**

OPTCD When a RECEIVE macro instruction is completed and a function management header is present, the OPTCD field is set to indicate FMHDR. The OPTCD field is also set when data flow control or function management data requests or responses are received. The field thus corresponds to the format indicator in the request header of the received request or response.

CODESEL When a RECEIVE macro instruction is completed, the CODESEL field indicates whether the data received in standard or alternate code.

Examples

```
RPL1       RPL        ACB=ACB1,NIB=NIB1,AM=VTAM,
                      OPTCD=(SPEC,ASY),
                      EXIT=EXITPGM
```

RPL1 can be used by an OPNDST macro instruction to connect the terminal represented in NIB1 to the application program, that is, to ACB1. When the operation is completed, the application program will be interrupted, and the routine at EXITPGM is invoked.

```
RPL2       RPL        ACB=ACB1,AM=VTAM,AREA=SOURCE,POST=RESP,
                      RECLEN=132,ECB=ECBWORD,OPTCD=ASY
```

RPL2 can be used by a SEND macro instruction to write a data message (132 bytes from SOURCE) to a terminal. When the request has been accepted, control is returned. When the request has been completed, ECBWORD is posted. (The CHECK macro instruction used to check the send operation would point to RPL2.)

RPL Fields and RPL-Based Macro Instructions

Figure 16 shows all of the ACF/VTAM macro instructions that allow RPL modifications to be indicated when the macro instruction is coded. It also shows all of the RPL fields, including the option codes of the OPTCD field, that might be modified by the application program or by ACF/VTAM. The symbols in the table indicate, for a given macro instruction, the RPL fields that are set by ACF/VTAM or by the application program.

The programmer coding the macro should be aware of that field's effect either by checking the the description of that macro instruction or by checking the field's description in the RPL macro instruction. The absence of an A or V means that the contents of that field can be safely ignored when that macro instruction is issued.

Note: *When issuing an RPL-based macro instruction, the value remaining in an RPL field after its last use is reused unless the application program explicitly alters the field. There are, therefore, no default values for the operands of RPL-based macro instructions.*

RPL–modifying macro instructions →		CLSDST						OPNDST																
Applicable RPL fields:	CHANGE	(PASS)	(RELEASE)	DO	EXECRPL	INQUIRE	INTRPRET	(ACQUIRE)	(ACCEPT)	OPNSEC	RCVCMD	READ	RECEIVE	REQSESS	RESET	RESETSR	SEND	SENDCMD	SESSIONC	SETLOGON	SIMLOGON	SOLICIT	TERMSESS	WRITE
ACB	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
ARG/NIB (When ARG specified)		A	A	A	AV	A	A	V	V	V		AV	AV		A	A	A		A			A	A	A
ARG/NIB (When NIB specified)	A	A	A		A	A	A	A	A	A				A							A		A	
AREA		A		A	AV	A	A	V		V	A	A	A	A			A	A			A			A
AREALEN					A	A					A	A	A											
RECLEN		A		V	AV	V	A				V	V	V	A			A	A		V	A			A
AAREA		A		V	AV		A			A				A										A
AAREALN					A		A																	A
ARECLEN					V		V																	V
BRANCH					A								A			A	A							
EXIT/ECB (When ECB specified)	For all macros: A																							
EXIT/ECB (When EXIT specified)	For all macros: If OPTCD=ASY, A; OPTCD=SYN, AV																							
EXIT/ECB (When neither is specified)	For all macros: V																							
REQ	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
RTNCD[1]	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
FDBK2[1]	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
FDBK[1]				V	V	V						V												V
SENSE[1]				V	V							V										V		
USER				V	V							V	V		V	V	V		V			V		V
SEQNO					AV								V				AV		AV					
POST					A												A							
RESPOND					AV								V				AV		V					
CONTROL					AV								V				A		A					
CHAIN					AV								V				AV[1]							
CHNGDIR					AV								V				AV[1]							
BRACKET					AV								V				A							
RTYPE					AV								AV			A	AV[1]							
STYPE					A												A		A					
SSENSEO[2]					AV												AV							
SSENSMO[2]					AV												AV							
USENSEO[2]					AV												AV							
SSENSEI[1]					V			V	V				V	V			V		V				V	
SSENSMI[1]					V			V	V				V	V			V		V				V	
USENSEI[1]					V			V	V				V	V			V		V				V	
IBSQAC					AV														AV					
CRYPT					A								V				A							

Figure 16 (Part 1 of 2). The RPL Fields Applicable to the Macro Instructions That Can Modify RPLs

RPL–modifying macro instructions → Applicable RPL fields:	CHANGE	CLSDST (PASS)	 (RELEASE)	DO	EXECRPL	INQUIRE	INTRPRET	OPNDST (ACQUIRE)	 (ACCEPT)	OPNSEC	RCVCMD	READ	RECEIVE	REQSESS	RESET	RESETSR	SEND	SENDCMD	SESSIONC	SETLOGON	SIMLOGON	SOLICIT	TERMSESS	WRITE
OBSQAC					AV														AV					
IBSQVAL					AV														AV					
OBSQVAL					AV														AV					
SIGDATA					AV								V				A							
CODESEL					AV								V				A							
OPTCD:																								
TRUNC–KEEP–NIBTK					A								A											
FMHDR–NFMHDR					AV								V				A							
CONANY–CONALL					A			A													A			
ACQUIRE–ACCEPT					A			A	A															
SPEC–ANY					A				A			A	A									A		
QUIESCE–START–STOP					A															A				
PASS–RELEASE		A	A		A																			
LOGONMSG–DEVCHAR–COUNTS–BSCID–TERMS–APPSTAT–CIDXLATE–TOPLOGON–SESSPARM					A	A																		
SYN–ASY	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
CS–CA	A			A	A			A	A	A		A	A		A	A	A					A		A
BLK–LBM–LBT					A																			A
CONV–NCONV					A																			A
COND–UNCOND–LOCK					A										A								A	
ERASE–EAU–NERASE					A																			A
RELRQ–NRELRQ					A																A			
Q–NQ					A				A		A		A	A							A			

1 When set by ACF/VTAM, these fields are cleared (set to 0) when the processing of the macro instruction begins.

2 These fields are cleared by ACT/VTAM on completion of all RPL-based macros that have been accepted.

The presence of a symbol means that the RPL field or option code is applicable for the macro instruction in one of three ways:

A	The field or option code is set by the *application program* to supply ACF/VTAM information about the request.
V	The field is set by *ACF/VTAM* when the request has been completely processed.
AV	The field is set by the *application program* and, then reset by *ACF/VTAM.* Users intending to reissue requests that use these fields should reinitialize them first. See the restriction that appears in the EXECRPL macro instruction description and in the RPL macro instruction description under "RPL Fields Set by ACF/VTAM".

Figure 16 (Part 2 of 2). The RPL Fields Applicable to the Macro Instructions That Can Modify RPLs

SEND–Send Output to a Logical Unit (Record Mode Only)

The SEND macro instruction transmits a request or a response to a logical unit. The major options for a SEND macro instruction are illustrated in Figure 17.

Two options are available when data or other normal-flow messages (requests or responses) are sent. The first option, scheduled output, is completed as soon as the output data area containing the message can be reused. This occurs prior to the actual transmission of the message. The resulting response (if any) is received using a separate RECEIVE macro instruction or in a RESP exit routine. The second option, responded output, is not completed until the request has been transmitted and a response is returned. The RPL used for the SEND macro instruction is used to receive the response; no separate RECEIVE macro instruction or RESP exit routine is used. Responded output can be used only when a response is assured.

Th e RESPLIM field of a logical unit's NIB limits the number of concurrent responded output requests. Scheduled output requests cannot be stacked in this manner, however. Only one outstanding (uncompleted) scheduled output request is permitted at a time.

Name	*Operation*	*Operands*
[symbol]	SEND	RPL=rpl address [, rpl field name=new value]...

RPL=rpl address
Indicates the location of the RPL that describes the SEND operation.

rpl field name=new value
Indicates an RPL field to be modified, and the new value that is to be contained or represented within it. To avoid the possibility of program reassembly following future releases of ACF/VTAM, set the RPL field with MODCB macro instructions rather than with the SEND macro instruction.

Format: For *rpl field name* code the keyword of the RPL macro instruction operand that corresponds to the RPL field being modified. The *new value* can be any value that is valid for that operand in the RPL macro instruction, or it can indicate a register. ARG=(register) can also be coded.

The following RPL operands apply to the SEND macro instruction:

ACB=acb address
Indicates the ACB that identifies the application program and was used when the receiving logical unit was connected.

ARG=(register)
The SEND macro instruction is always directed at one specific logical unit. The ARG operand specifies the register containing the CID of the session with the logical unit being transmitted to. If the ARG field is not modified, the CID that is already in the RPL's ARG field is used.

Send a data request
STYPE=REQ
CONTROL=DATA

Responded output: Response included as part of the SEND macro instruction.
POST=RESP

Scheduled output: SEND macro instruction completed as soon as output data area free; response (if any) obtained with a RECEIVE macro instruction or RESP exit routine.
POST=SCHED

Send a nondata request
STYPE=REQ
CONTROL=

QEC	Send a Quiesce at End of Chain Command
RELQ	Send a Release Quiesce Command
QC	Send a Quiesce Complete Command
CANCEL	Send a Cancel Command
CHASE	Send a Chase Command
BID	Send a Bid Command
SHUTD	Send a Shutdown Command
LUS	Send a Logical Unit Status Command
SIGNAL	Send a Signal Command
RTR	Send a Ready to Receive Command
RSHUTD	Send a Request Shutdown Command
SHUTC	Send a Shutdown Complete Command
SBI	Send a Stop Bracket Initiation Command
BIS	Send a Bracket Initiation Stopped Command

Send a response to a normal-flow (DFSYN) data request or to a Bid, Cancel, Chase, Logical Unit Status, Bracket Initiation Stopped, Ready to Receive, or Quiesce Complete command.
STYPE=RESP, CONTROL=DATA|BID|CANCEL|CHASE|LUS|BIS|RTR|QC

Positive Response

Definite response 1	Definite response 2
Definite responses 1 and 2	

Negative Response

Definite response 1	Definite response 2
Definite responses 1 and 2	

Send a response to a Quiesce at End of Chain, Release Quiesce, Shutdown, Signal, Request Shutdown, Shutdown Complete, or Stop Bracket Initiation expedited data flow control commands[1].
STYPE=RESP, CONTROL=QEC|RELQ|SHUTD|SIGNAL|RSHUTD|SHUTC|SBI

Positive Response

Definite response 1

Negative Response

Definite Response 1

[1] Only required if the NIB associated with the logical unit specifies PROC=APPLRESP.

Figure 17. The Major SEND Options

AREA=output data address
The data contained at the location designated by AREA is sent to the logical unit. This storage can be reused as soon as ACF/VTAM has transferred the data to its own buffers (see POST=SCHED below). This operand is meaningful only if data is being sent (CONTROL=DATA).

RECLEN=output data length
The number of bytes of data indicated in this field is sent to the logical unit. The maximum value that can be set is 32767. If the RECLEN field is set to 0, the AREA field is not examined.

If the length specified in the RECLEN field exceeds the length of the data to be sent, the content of the data received at the logical unit is unpredictable.

STYPE=REQ | RESP
Designates whether a request (STYPE=REQ) or a response (STYPE=RESP) is to be sent. The CONTROL field governs the type of message sent, while the RESPOND field governs the type of response sent.

STYPE=REQ,CONTROL=DATA | QEC | RELQ | QC | CANCEL | CHASE |
RSHUTD | SHUTD | SHUTC | BID | RTR | LUS |
SIGNAL | SBI | BIS

CONTROL=DATA
Sends a data request.

CONTROL=QEC
Sends a Quiesce at End of Chain command. This informs the logical unit that when it is through transmitting the current chain it is to stop transmitting further normal-flow requests and return a Quiesce Completed (QC) command.

CONTROL=RELQ
Sends a Release Quiesce command. This informs the logical unit that it can begin transmitting normal-flow requests.

CONTROL=QC
Sends a Quiesce Complete command. This informs the logical unit that the application program will no longer transmit normal-flow requests. Once this indicator is sent, no data can again be transmitted to the logical unit until the logical unit returns a Release Quiesce (RELQ) command.

CONTROL=CANCEL
Sends a Cancel command. The logical unit may interpret this signal as an indication that the logical unit should discard the chain that it is receiving. A Cancel command is sent instead of indicating that a request is the last request (CHAIN=LAST) when a request chain is canceled.

CONTROL=CHASE
Sends a Chase command. When the application program receives a response to this command, it can be certain that no requests are in the network for which the logical unit has failed to return a response.

CONTROL=RSHUTD
Sends a Request Shutdown command to the primary end of the session. This requests the primary application program to terminate the session (such as issue a CLSDST macro instruction).

CONTROL=SHUTD
Sends a Shutdown command to the secondary end of the session. The logical unit interprets this as an indication that the application program is about to disconnect the logical unit. When the logical unit is ready to accept disconnection, it returns a Shutdown Complete (SHUTC) command.

CONTROL=SHUTC
Sends a Shutdown Complete command to the primary end of the session. This acknowledges the receipt of a SHUTD command and indicates the secondary logical unit is ready to accept disconnection.

CONTROL=SBI
Sends a Stop Bracket Initiation command to request that the logical unit begin any new brackets.

CONTROL=BIS
Send a Bracket Initiation Stopped to indicate that the application program will stop initiating any new brackets. If a bracket is underway in a session, it is allowed to complete normally.

CONTROL=BID
Sends a Bid command. The logical unit interprets this as a request on the part of the application program for permission to begin a new bracket.

CONTROL=RTR
Sends a Ready to Receive command. This indicates that the sending terminal or logical unit has ended a bracket and the receiving application program may begin a new bracket.

CONTROL=LUS
Sends a Logical Unit Status (LUS) command. An LUS command can convey the same type of information as does a negative response. It can also convey information about the availability of a logical unit or its components. An LUS is sent when the application program wishes to raise an exception or change-of-status condition, but cannot do so with an exception response (for example, the logical unit is sending messages and requesting no responses whatever). The SSENSEO, SSENSMO, and USENSEO fields are used for LUS indicators.

CONTROL=SIGNAL
Sends the 4 bytes of signal data contained in the SIGDATA field of the RPL.

**STYPE=RESP,CONTROL=DATA | QC | CANCEL |
CHASE | BID | LUS | RTR|BIS**
Sends a response indicating whether or not a previous corresponding normal-flow request has been processed successfully. A positive or negative response of any type (definite response 1, 2, or both) is allowed may be sent; however, only certain combinations are valid within SNA protocols. The CONTROL field operands are explained above.

**STYPE=RESP,CONTROL=QEC | RELQ | SHUTD |
SIGNAL | RSHUTD | SHUTC|SBI**
Sends a response indicating whether or not a previous corresponding expedited data flow control request has been received successfully. Only a positive or negative definite response 1 is allowed. The CONTROL field operands are explained above.

Note: *A response to an expedited data flow control request can only be sent if the NIB specifies PROC=APPLRESP; otherwise, ACF/VTAM sends the response on behalf of the* *application program. Sending or receiving a Clear command eliminates the requirement to send a response to an expedited-flow request.*

BRACKET=(BB | NBB,EB | NEB)
This field indicates whether the message forms the beginning, middle, end, or sole element of a bracket. This operand is meaningful only when bracket protocol is being used by the logical unit (see *ACF/VTAM Concepts and Planning* for an explanation of bracket protocol).

BRACKET=(BB,NEB)
This is the beginning of a bracket.

BRACKET=(NBB,NEB)
This is the middle of a bracket.

BRACKET=(NBB,EB)
This is the end of a bracket.

BRACKET=(BB,EB)
This request is a bracket only.

CODESEL=STANDARD | ALT
This operand indicates whether the request being sent to the logical unit is encoded in the standard code or in some other code (ALT).

CHNGDIR=(CMD | NCMD,REQ | NREQ)
This operand indicates the type of change-direction indicator to be sent (see *ACF/VTAM Macro Language Guide* for an explanation of change-direction indicators):

CHNGDIR=(CMD,NREQ)
Send a Change Direction Command indicator (valid only for DFSYN).

CHNGDIR=(NCMD,REQ)
Send a Change Direction Request indicator (valid only for RESP and DFASY).

CHNGDIR=(NCMD,NREQ)
Send no change-direction indicators.

CHAIN=FIRST | MIDDLE | LAST | ONLY
Indicates the position of the request within the chain of requests currently being transmitted.

CRYPT=YES | NO (Encrypt/Decrypt Feature only)
Indicates whether the data at the location specified by AREA is to be enciphered before it is sent to the logical unit.

If the application program specifies CRYPT=YES, but the session is not capable of cryptography, the data is sent without being enciphered. Since ACF/VTAM does not encipher the data, it is assumed that private (user defined) enciphering is being used.

CRYPT=NO indicates that the data is not to be enciphered by ACF/VTAM.

BRANCH=YES | NO (OS/VS2 MVS only)
If SEND is being issued in an application program that is running in privileged state under a TCB, BRANCH can be set YES. See the RPL macro instruction for more information.

POST=SCHED | RESP

This operand defines at what point in the output operation the SEND macro instruction is to be completed. (The OPTCD=SYN | ASY, ECB, and EXIT operands govern the action to be taken when the macro instruction is completed.)

POST=SCHED (scheduled output)

Indicates that the macro instruction is to be completed as soon as the output data area (pointed to by the AREA field) and the RPL are available for reuse. This occurs prior to the actual transmission of the data from the CPU. A RECEIVE macro instruction (or a RESP exit routine) is required to obtain the response. Only one SEND with POST=SCHED can be outstanding for a given logical unit at one time. A second SEND with POST=SCHED issued before the first has been completed is rejected by ACF/VTAM with a logical error return code. POST=SCHED is assumed if the RESPOND field indicates that no response (or only an exception response) is expected–that is, if a response is not assured.

POST=RESP (responded output)

Indicates that the macro instruction is to be completed only when a response unit is returned from the logical unit. A RECEIVE is not used to obtain the response; the response information is posted in the SEND RPL. The RESPLIM field of the logical unit's NIB limits the number of SEND macro instructions for normal-flow requests with POST=RESP that can be outstanding at one time. POST=RESP can only be used when a response is assured–that is, when the RESPOND field of the SEND RPL is set to NEX. If EX is used for RESPOND, POST=SCHED is assumed by ACF/VTAM (the actual setting of the POST field is ignored).

When a response is being sent by the application program (STYPE=RESP) posting takes place as though POST=SCHED had been specified (the actual setting of the POST field is ignored). The limit of one SEND (POST=SCHED) outstanding for a logical unit at a time does not apply to the sending of responses.

When a data flow command is sent (STYPE=REQ, CONTROL set to other than DATA) and the NIB specifies PROC=NORDRESP, posting takes place as if POST=RESP had been specified; the actual setting of the POST field is ignored. Figure 18 summarizes the use of the POST operand.

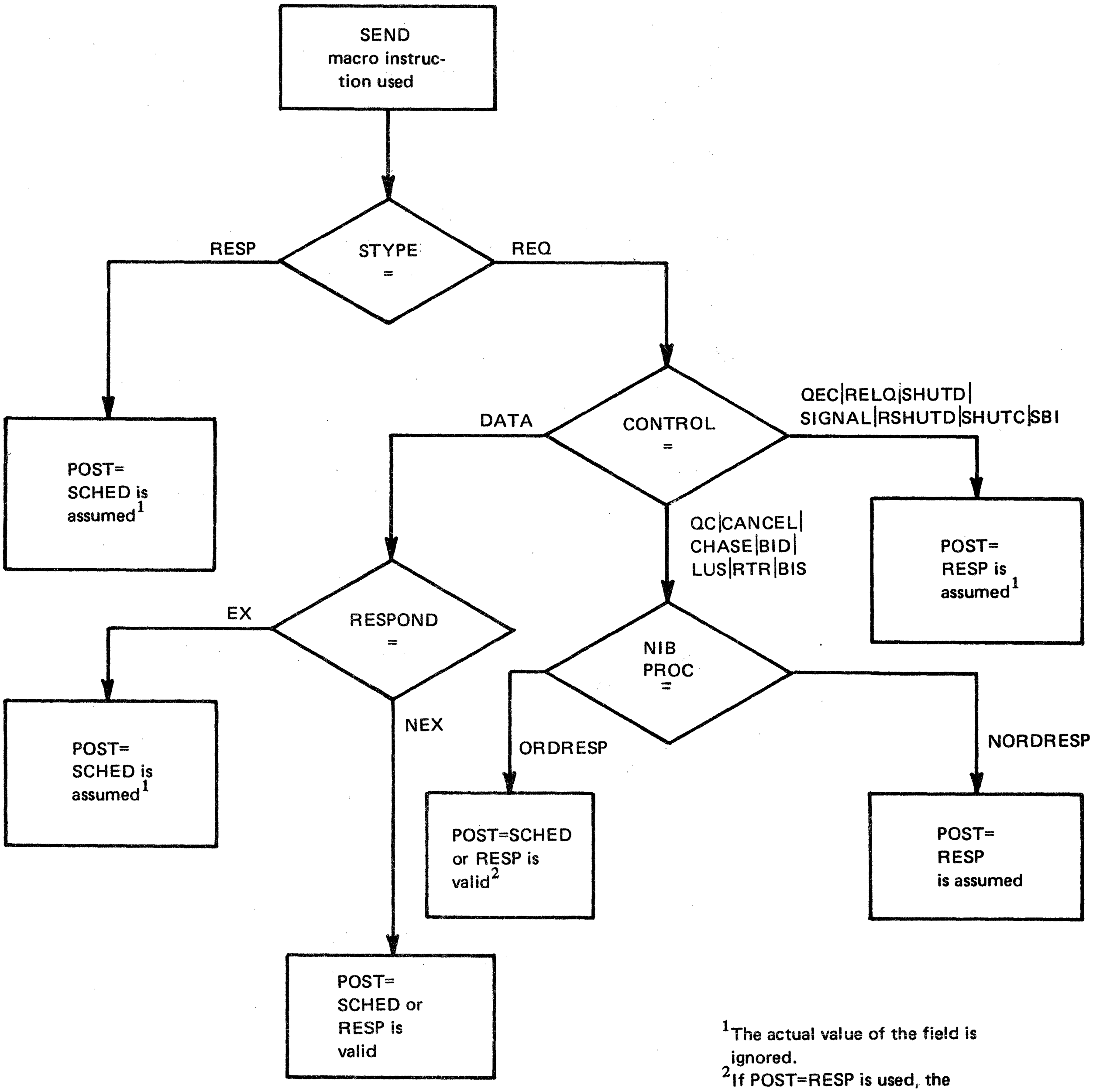
SIGDATA=signal data

Contains the signal data that is to be sent when CONTROL=SIGNAL is specified. The signal data can be a decimal, hexadecimal, or character constant of from 1 to 4 bytes or a register (the value in the register is used).

ECB=ecb exit routine address
ECB=INTERNAL
EXIT=rpl exit routine address

Indicates the action to be taken by ACF/VTAM when an asynchronous (OPTCD=ASY) SEND macro instruction is completed. The actual or implied setting of the POST field governs what constitutes the "completion" of the SEND macro instruction. If EXIT is specified, the RPL exit routine is scheduled. Otherwise, the ECB is posted and CHECK or WAIT must be used to determine when posting occurs.

If ECB=INTERNAL is specified and *synchronous* handling (SYN option) is used, ACF/VTAM uses the ECB-EXIT field in the RPL as an *internal* ECB and clears it. If *asynchronous* handling (ASY option) is used, ACF/VTAM will also use the ECB-EXIT field in the RPL as an internal ECB, but the user must issue a CHECK macro instruction


SEND macro instruction used
STYPE =
RESP
REQ
POST= SCHED is assumed[1]
CONTROL =
DATA
QEC|RELQ|SHUTD| SIGNAL|RSHUTD|SHUTC|SBI
QC|CANCEL| CHASE|BID| LUS|RTR|BIS
POST= RESP is assumed[1]
RESPOND =
EX
NEX
POST= SCHED is assumed[1]
NIB PROC =
ORDRESP
NORDRESP
POST=SCHED or RESP is valid[2]
POST= RESP is assumed
POST= SCHED or RESP is valid

[1] The actual value of the field is ignored.

[2] If POST=RESP is used, the RESPOND field must be set to NEX by the application program.

Figure 18. How the POST Operand in the SEND Macro Instruction Is Used

to check and clear it. If neither the ECB nor EXIT keywords are specified, ACF/VTAM treats the field as if ECB=INTERNAL had been specified. See the RPL macro instruction for more information.

OPTCD=SYN | ASY

When SYN is set, control is returned to the application program when the SEND operation is completed (see the POST operand above). When ASY is set, control is returned as soon as ACF/VTAM has accepted the SEND request. Once the operation has been completed, the ECB is posted or the RPL exit routine is scheduled, as indicated by the ECB-EXIT field. See the RPL macro instruction for more information.

OPTCD=CA | CS
When the SEND operation is completed, the logical unit is placed in continue-any mode (OPTCD=CA) or continue-specific mode (OPTCD=CS) for the types of input specified by the RTYPE field. More than one type of input can be specified. ACF/VTAM switches the modes for all specified types of input. No switching occurs if RTYPE=(NDFSYN,NDFASY,NRESP) is in effect for the SEND.

RTYPE=(DFSYN | NDFSYN,DFASY | NDFASY,RESP | NRESP)
When a SEND is issued, the RTYPE field indicates the type or types of input for which the logical unit's CA-CS mode is to be switched. See the RECEIVE macro instruction for a description of input types.

OPTCD=FMHDR | NFMHDR
When OPTCD=FMHDR is used, the receiver is notified that the data contains a function management header.

SEQNO=sequence number
This field is set by the application program only when a response is being sent (STYPE=RESP). The sequence number is the same as the sequence number of a request to which a response is required but to which you have not yet responded. If the RPL used to receive a request is used to send the response, the SEQNO field will already be set to the correct value.

RESPOND=(EX | NEX,FME | NFME,RRN | NRRN,
QRESP | NQRESP)
When a request is being sent (STYPE=REQ), this field indicates the desired response:

> **RESPOND=(*x*,*x*,*x*,QRESP)** and the NIB specifies PROC=ORDRESP
> The response is to be returned in order with incoming normal-flow (DFSYN) requests. The application program should issue a RECEIVE (RTYPE=DFSYN) to receive this response.
>
> **RESPOND=(*x*,*x*,*x*,NQRESP)** or the NIB specifies PROC=NORDRESP
> The response is to be returned with other incoming responses and not necessarily in order with normal-flow (DFSYN) requests. To receive this response, the application program must have an outstanding RECEIVE RTYPE=RESP for the logical unit or a RESP exit routine to be scheduled, or it must have specified POST=RESP in the SEND macro.
>
> **RESPOND=(EX,FME,RRN,*x*)**
> Only negative responses type 1 and 2 are expected (see note below).
>
> **RESPOND=(EX,FME,NRRN,*x*)**
> Only a negative response type 1 is expected.
>
> **RESPOND=(EX,NFME,RRN,*x*)**
> Only a negative response type 2 is expected.
>
> **RESPOND=(EX,NFME,NRRN,*x*)**
> No response expected.
>
> **RESPOND=(NEX,FME,RRN,*x*)**
> Definite response type 1 or 2 is expected (see note below).
>
> **RESPOND=(NEX,FME,NRRN,*x*)**
> Definite response type 1 is expected.

RESPOND=(NEX,NFME,RRN, ***x*****)**
Definite response type 2 is expected.

RESPOND=(NEX,NFME,NRRN, ***x*****)**
No response expected.

Note: *Although ACF/VTAM and certain logical units permit response types 1 and 2 to be sent separately, this is not an SNA protocol and should be avoided.*

If responses 1 and 2 are returned and POST=RESP for the SEND RPL, the first response completes the SEND request. If the two responses are returned together, both are received as one response–that is, the second response is also reflected in the completed RPL. If the second response does not accompany the first, however, the second response must be received by a separate RECEIVE macro instruction or by a RESP exit routine.

When a response is being sent (STYPE=RESP), this field indicates the response type:

RESPOND=(***x,x,x,*****QRESP|NQRESP)**
The queued response indicator must be set to the same value as received in the request.

RESPOND=(EX,FME,RRN, ***x*****)**
This is a negative response type 1 or 2.

RESPOND=(EX,FME,NRRN, ***x*****)**
This is a negative response type 1.

RESPOND=(EX,NFME,RRN, ***x*****)**
This is a negative response type 2.

RESPOND=(EX,NFME,NRRN, ***x*****)**
Invalid.

RESPOND=(NEX,FME,RRN, ***x*****)**
This is a positive response type 1 or 2.

RESPOND=(NEX,FME,NRRN, ***x*****)**
This is a positive response type 1.

RESPOND=(NEX,NFME,RRN, ***x*****)**
This is a positive response type 2.

RESPOND=(NEX,NFME,NRRN, ***x*****)**
Invalid.

Note also that if an application program is sending a response to a request, the response must contain the same QRESP or NQRESP setting as the request.

SSENSEO=CPM|STATE|FI|RR
This field contains the system sense code that is to be sent to the logical unit as part of a negative response or Logical Unit Status (LUS) command. The system sense code represents a major class of error and is used in conjunction with the SSENSMO (system sense modifier value) to describe a specific type of error. There is more information about the SSENSEO and SSENSMO fields near the end of Appendix C.

Note: *When an RPL is assembled or generated, and each time the RPL is reset to its inactive state (that is, after each synchronous request with OPTCD=SYN or CHECK macro instruction), the SSENSEO field is cleared.*

SSENSMO=system sense modifier value

This field, in conjunction with the code in the SSENSEO field, defines a particular type of SNA-defined error. The type of error represented by each system sense modifier value is described near the end of Appendix C. Like SSENSEO, SSENSMO is meaningful only when a negative response or a Logical Unit Status (LUS) command is sent to the logical unit. The system sense modifier value is coded as a decimal quantity or as any 1-byte framed hexadecimal (such as SSENSMO=X'1B' as defined in Appendix C). Register notation can also be used.

Note: *When an RPL is assembled or generated, and each time the RPL is reset to its inactive state (that is, after each synchronous request with OPTCD=SYN or CHECK macro instruction), the SSENSMO field is set to 0.*

USENSEO=user sense value

The value set in this field is sent to the logical unit as part of a negative response or as part of a Logical Unit Status (LUS) command. It may be used to inform the logical unit that the exception condition is not being raised because of a SNA-defined error as defined by IBM in the SSENSEO and SSENSMO fields (see Appendix C) but because of an application-program-related error. Alternatively, the USENSEO field in the application program may be used to further modify the information supplied in the SSENSEO and SSENSMO fields for SNA-defined errors. The user sense value is coded as any 2-byte decimal quantity or as any 2-byte framed hexadecimal or character constant (such as USENSEO=X'4F4F' or USENSEO=C'ZZ'). Register notation can also be used.

Note: *When the RPL is assembled or generated, and each time the RPL is reset to its inactive state (that is, after each synchronous request OPTCD=SYN or CHECK macro instruction), the USENSEO field is set to 0.*

Example

```
SEND1        SEND        RPL=RPL1,STYPE=REQ,CONTROL=DATA,
                         AREA=OUTBUF,RECLEN=60,CHAIN=ONLY,
                         RESPOND=(EX,FME,NRRN,NQRESP)
```

SEND1 sends a 60-byte data message to the logical unit identified in RPL1's ARG field. SEND1 is completed as soon as ACF/VTAM has scheduled the output operation and OUTBUF (and RPL1) are available for reuse. The RESPOND field indicates that only negative response type 1 should be returned; that is, if the message is processed normally, no response is to be returned. A RECEIVE RTYPE=RESP macro (or RESP exit routine) is required to obtain the negative response, if one is returned.

Return of Status Information

After the SEND operation is completed, the following RPL fields are set:

The sequence number is placed in the SEQNO field.

The USER field contains the value that was set in the USERFLD field of the NIB when the logical unit was connected.

If POST=RESP and a negative response has been returned, the SSENSEI field may contain a system sense error code. The values that can be set in the SSENSEI field are the same as those that can be set in the SSENSEO field—namely, 0, CPM, STATE, FI, or RR; in addition, PATH can be set when an unrecoverable path error has occurred. There is more information about these codes near the end of Appendix C.

If POST=RESP and a negative response has been returned, the SSENSMI field may contain a system sense modifier value. This field is tested as a quantity 1 byte in length. There is more information about the SSENSMI codes near the end of Appendix C.

If POST=RESP and a negative response has been returned, the USENSEI field may contain a user sense value. This field is tested as a quantity 2 bytes in length.

The value 34 (decimal) is set in the REQ field, indicating a SEND request.

The RTNCD and FDBK2 fields are set as indicated in Appendix C.

In addition to the above fields, the following fields may be set when a response has been received (POST=RESP):

The RTYPE field indicates the type of the response.

The RESPOND field indicates the type of response that has been returned. This field is set in exactly the same manner as indicated above for sending a response.

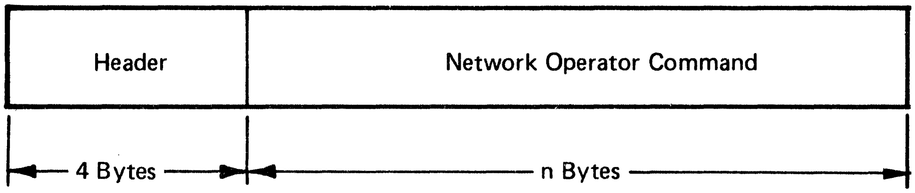
Registers 0 and 15 are also set as indicated in Appendix C.

SENDCMD–Send a Network Operator Command to ACF/VTAM

It is possible for an application program to send network operator commands to ACF/VTAM and to reply to messages sent to the application program by ACF/VTAM. The SENDCMD macro instruction permits an authorized application program to send the following commands: the VARY, DISPLAY, MODIFY, and REPLY commands.

Note: *The HALT and START commands may not be issued using the SENDCMD macro instruction. They can only be issued by the operator at the system console.*

The SENDCMD macro instruction points to an RPL whose AREA field points to the location in the application program that contains a header followed by the command to be sent. The general format of the header and command is:



For information on using the data area and writing an application program that can issue network operator commands and receive ACF/VTAM messages, see the publication *ACF/VTAM Program Operator Guide,* SC38-0257.

The use of the SENDCMD macro instruction must be authorized by the installation.

Name	*Operation*	*Operands*
[symbol]	SENDCMD	RPL=rpl address [,rpl field name=new value] . . .

RPL=rpl address
Indicates the location of the RPL that describes the SENDCMD operation.

rpl field name=new value
Indicates an RPL field name to be modified and the new value that is to be contained or represented within it. To avoid the possibility of program reassembly in a future release of ACF/VTAM, set the RPL field with MODCB macro instructions rather than with the SENDCMD macro instruction.

Format: For *rpl field name* code the keyword of the RPL macro instruction operand that corresponds to the RPL field being modified. The *new value* can be any value that is valid for that operand in the RPL macro instruction.

The following RPL operands apply to the SENDCMD macro instruction:

ACB=acb address
Indicates the ACB that identifies the application program.

AREA=command address
Indicates the address of the header and command to be sent to ACF/VTAM.

RECLEN=command length
Indicates the number of bytes to be sent to ACF/VTAM. The number specified must be equal to the length of the header and command pointed to by the AREA field. If the RECLEN field is set to 0, the AREA field is not examined. The maximum length is 130.

ECB=ecb address
ECB=INTERNAL
EXIT=rpl exit routine address
Indicates the action to be taken by ACF/VTAM when an asynchronous (OPTCD=ASY) SENDCMD operation is completed. If EXIT is specified, the RPL exit routine is scheduled. Otherwise, the ECB is posted, and CHECK or WAIT must be used to determine when posting occurs.

If ECB=INTERNAL is specified and *synchronous* handling (SYN option) is used, ACF/VTAM uses the ECB-EXIT field in the RPL as an *internal* ECB and clears it. If *asynchronous* handling (ASY option) is used, ACF/VTAM also uses the ECB-EXIT field as an internal ECB, but the user must issue a CHECK macro instruction to check and clear it. If neither the ECB nor EXIT keywords are specified, ACF/VTAM treats the field as if ECB=INTERNAL had been specified. See the RPL macro instruction for more information.

OPTCD=SYN|ASY
SYN specifies that control is returned to the application program when the SENDCMD operation is completed. ASY specifies that control is returned as soon as ACF/VTAM has accepted the SENDCMD request. Once the operation has been completed, the ECB is posted or the RPL exit routine is scheduled, as indicated by the ECB-EXIT field. See the RPL macro instruction for more information.

Example

```
SENDCMD1   SENDCMD  RPL=RPL1,AREA=CMDBUF,RECLEN=CMDLEN
           .
           .
           .
CMDBUF     DS       10F          COMMAND BUFFER
VARYCMD1   DC       X'00'        HEADER
           DC       X'03'        STATUS FIELD
           DC       X'0001'      IDENTIFICATION NUMBER
           DC       C'VARY NET,ACT,ID=LU1'     COMMAND
CMDEND     EQU      *
CMDLEN     EQU      CMDEND-VARYCMD1
```

SENDCMD1 sends a message to ACF/VTAM, consisting of the area between VARYCMD1 and CMDEND, instructing it to activate logical unit LU1. The status field indicates that a reply is to be returned to the application program.

Return of Status Information

After the SENDCMD operation is completed, the following RPL fields are set:

The value 39 (decimal) is set in the REQ field, indicating a SENDCMD request.

The RTNCD and FDBK2 fields are set as indicated in Appendix C.

Registers 0 and 15 are also set as indiciated in Appendix C.

SESSIONC–Send an SDT, RQR, Clear, or STSN Command or Send a Response to a Bind or STSN Command (Record Mode Only)

SESSIONC sends a Start Data Traffic (SDT), Clear, or Set and Test Sequence Number (STSN) command from a primary application program to secondary application program or logical unit. (Figure 19). SESSIONC is also used to send a Request Recovery (RQR) command as well as responses to Bind, SDT, and STSN commands from a secondary application program to a primary application program. Figure 19 shows the SESSIONC options. The use of these commands is determined by the transmission services profile that is in use. See Appendix J for a description of the profiles and the commands that can be used.

Either end of a session has the ability to check its inbound and outbound sequence numbers and, if necessary, to suspend traffic flow and ask that correct numbers be reestablished. When the primary application program wishes to reestablish correct sequence numbers, it issues a Clear (if allowed in the TS profile for the session) followed by a STSN command. If the logical unit acting as the secondary end of the session wishes to reestablish correct sequence numbers, it issues an RQR command. The primary application then issues the Clear and STSN commands.

There are four STSN options (CONTROL=STSN, STYPE=REQ) that the primary application program can send to the logical unit: SET, TESTSET, INVALID, and IGNORE. The logical unit acting as the secondary end of the session responds with an STSN command (CONTROL=STSN, STYPE=RESP) and causes the setting of the IBSQAC and OBSQAC fields as shown in Figure 20.

A SESSIONC macro instruction can be used to send STSN commands that apply to either the inbound or the outbound sequence numbers, or that apply to both independently.

When an SDT or Clear command is sent to the logical unit, a response type 1 is returned as part of the SESSIONC operation. That is, the command is sent as though POST=RESP and RESPOND=(NEX,FME,NRRN) had been specified on a SEND macro instruction. If a negative response is returned, the SSENSEI, SSENSMI, and USENSEI fields are set as they would be for any other type of command.

Name	*Operation*	*Operands*
[symbol]	SESSIONC	RPL=rpl address [,rpl field name=new value] . . .

RPL=rpl address

Indicates the location of the RPL that describes the SESSIONC operation.

rpl field name=new value

Indicates an RPL field to be modified and the new value that is to be contained or represented within it. If you wish to avoid the possibility of program reassembly following future releases of ACF/VTAM, set the RPL field with MODCB macro instructions rather than with the SESSIONC macro instruction.

Send a Start Data Traffic command to a logical unit.

CONTROL=SDT,STYPE=REQ
The primary application program sends an SDT to a logical unit to allow the flor of data or data flow command requests or responses to begin (or resume).

Send a Clear command to a logical unit.

CONTROL=CLEAR,STYPE=REQ
The primary application program sends a Clear command to a logical unit. This resets sequence numbers, prevents the flow of data or data flow command requests or responses, and discards any such requests or responses in the network. All pending SEND macro instructions are canceled with a physical error code.

Send a Request Recovery (RQR) command to the primary application program.

CONTROL=RQR, STYPE=REQ
Requests the primary application program to take recovery action appropriate for this session (such as issuing Clear and STSN).

Send a Set and Test Sequence Numbers command to a logical unit.

CONTROL=STSN, STYPE=REQ
When the SESSIONC macro instruction is issued, the settings of the IBSQAC or OBSQAC field determines what happens to the associated sequence number.

Setting of IBSQAC on Request or OBSQAC Field	Action on Associated Sequence Number at Primary Application Program
SET	Set the sequence number to the specified value and send it to the logical unit.
TESTSET	Set the sequence number to the specified value, send it to the logical unit, and obtain a sequence number from the logical unit.
INVALID	Do not change the current sequence number. Obtain the sequence number from the logical unit.
IGNORE	Do not change the current sequence number.

Figure 19 (Part 1 of 2). The SESSIONC Options

Send the primary application program a response to a Set and Test Sequence Number (STSN)

CONTROL=STSN, STYPE=RESP, RESPOND=(EX|NEX, FME)

The settings of the IBSQAC/OBSQAC fields received by the logical unit will cause it to take the following action on the sequence numbers and respondappropriately:

Setting of IBSQAC on Request or OBSQAC	Action on Associated Sequence Number at Secondary Logical Unit	Possible Responses to Request
SET	Set the sequence number to the specified value.	TESTPOS RESET[1]
TESTSET	Compare the received value for sequence number and respond accordingly. Set the sequence number to the specified value.	TESTPOS TESTNEG INVALID RESET[1]
INVALID	Return sequence number information to the sender of STSN.	TESTNEG INVALID RESET[1]
IGNORE	Do not change sequence numbers. Ignore this part of the command.	TESTPOS

[1] This response is allowed by ACF/VTAM and certain logical units, but is reserved by SNA.

Send the primary application program a negative response to a Bind Command.

CONTROL=BIND, STYPE=RESP, RESPOND=(EX, FME)

Indicates that the Bind command is unacceptable to the secondary application program (for example, the session parameters are invalid or the application program does not wish a session with the primary application program specified in the Bind). This negative response will cause the OPNDST macro instruction in an ACF/VTAM primary application program to be completed unsuccessfully.

Send a response to an SDT command to a primary application program.

CONTROL=SDT, STYPE=RESP, RESPOND=(EX|NEX, FME)

Indicates that the secondary application program accepts or rejects an SDT. If a positive response is sent, requests and responses for data and data flow control commands can now be sent. If a negative response is sent, sense information can be included to indicate the reason for the rejection.

Figure 19 (Part 2 of 2). The SESSIONC Options

Value of the IBSQAC or OBSQAC Field When the SESSIONC[1] Was Issued by the Primary Application Program (STYPE=REQ)		Possible IBSQAC or OBSQAC Field Setting When SESSIONC Was Completed without Error by Receiving a Response from the Logical Unit	
SET	Sequence number set to value in IBSQVAL or OBSQVAL field.	TESTPOS	Logical unit agrees with value. No value is returned.
		RESET	note 2
TESTSET	Sequence number set to value in IBSQVAL or OBSQVAL field.	TESTPOS	Logical unit agrees with value. Value returned in IBSQVAL or OBSQVAL field.
		TESTNEG	Logical unit disagrees with value. Logical unit's sequence number returned in IBSQVAL or OBSQVAL field.
		INVALID	Logical unit does not know the value. No value returned.
		RESET	note 2
INVALID	Application program is not setting or testing the sequence number for the associated flow. The sequence number is not changed.	TESTNEG	Logical unit knows the value. Value returned in IBSQVAL or OBSQVAL field.
		INVALID	Logical unit doesn't know the value either. No value returned.
		RESET	note 2
IGNORE	Application program is not setting or testing the sequence number for the associated flow. The sequence number is not changed.	TESTPOS	Logical unit ignores this part of the STSN command. No value is returned.

[1] The inbound and outbound sequence numbers are handled independently by STSN. Either one or both can be set by a single STSN command.

[2] ACF/VTAM and certain logical units will allow RESET to be specified. This setting is currently reserved by SNA for other than LU profile 0.

Figure 20. Types of STSN Commands and Their Possible Responses

Format: For *rpl field name* code the keyword of the RPL macro instruction operand that corresponds to the RPL field being modified. ARG can also be coded. The *new value* can be any value that is valid for that operand in the RPL macro instruction, or it can indicate a register. Register notation must be used if ARG is used.

The following RPL operands apply to a SESSIONC macro instruction:

ACB=acb address
Indicates the ACB that identifies the application program and was used when the logical unit was connected.

ARG=(register)
The SESSIONC macro instruction is always directed at one specific logical unit. The ARG operand specifies the register containing the CID of the session with that logical unit. If the ARG field is not modified, the CID already in the RPL's ARG field is used.

ECB=ecb address
ECB=INTERNAL
EXIT=rpl exit routine address
Indicates the action to be taken by ACF/VTAM when an asynchronous (OPTCD=ASY) SESSIONC request is completed. A SESSIONC request is completed when it has been sent to the logical unit and a response to it has been returned and posted in the RPL

(similar to a SEND request with POST=RESP). If EXIT is specified, the RPL exit routine is scheduled. Otherwise, the ECB is posted and CHECK or WAIT must be used to determine when the posting occurs.

If ECB=INTERNAL is specified and *synchronous* handling (SYN option) is used, ACF/VTAM uses the ECB-EXIT field in the RPL as an *internal* ECB and clears it. If *asynchronous* handling (ASY option) is used, ACF/VTAM will also use the ECB-EXIT field in the RPL as an internal ECB, but the user must issue a CHECK macro instruction to check and clear it. If neither the ECB nor EXIT keywords are specified, ACF/VTAM treats the field as if ECB=INTERNAL had been specified. See the RPL macro instruction for more information.

OPTCD=SYN|ASY
When SYN is set, control is returned to the application program when the SESSIONC request is completed (the request is completed when the command has been sent and a response has been returned). When ASY is set, control is returned as soon as ACF/VTAM has accepted the SESSIONC request; once the requested operation has been completed, the ECB is posted or the RPL exit routine is scheduled as indicated by the ECB-EXIT field. See the RPL macro instruction for more information.

CONTROL=SDT|CLEAR|STSN|RQR|BIND

CONTROL=SDT
Sends a Start Data Traffic command or a response to an SDT. When SDT=SYSTEM is coded as part of the application program's NIB, ACF/VTAM automatically sends a Start Data Traffic command (for a primary application program) or an SDT response (for a secondary application program) as part of the connection process. If SDT=APPL is coded instead, it is the application program's responsibility to send the command (for a primary application program) or response (for a secondary application program) when data traffic is to begin.

CONTROL=CLEAR
Sends a Clear command to the logical unit. All SEND, RECEIVE, RESETSR, and SESSIONC requests in progress are completed normally or with RTNCD=12 and FDBK2=12 (SYNAD exit routine is entered). All subsequent SEND, RECEIVE, and RESETSR requests are rejected with RTNCD=20 and FDBK2=65 (LERAD exit routine is entered). Before SESSIONC is completed, ACF/VTAM sets the inbound and outbound sequence numbers to 0.

CONTROL=STSN
Sends a Set and Test Sequence Numbers command to the logical unit acting as the secondary end of a session or returns information (if STYPE=RESP) to the primary application program in response to an STSN command.

CONTROL=RQR
Sends a Request Recovery to the primary application program. This command requests the primary application program to reestablish new sequence numbers and data flow.

CONTROL=BIND
Sends a response to a primary application program to indicate a rejection of the Bind command.

SEQNO=sequence number
Indicates the sequence number of a request or response. The application program responding to any SESSIONC requests must set this field with the sequence number of the request it is responding to.

SSENSEO=system sense value
SSENSMO=system sense modifier value
USENSEO=user sense value
Indicates sense information related to an exception (negative) response to an STSN or Bind command.

STYPE=REQ|RESP
This field designates the type of output to be sent to a logical unit. The application program uses STYPE=REQ to send a request. STYPE=RESP is used when a response is to be sent.

BRANCH=YES|NO (OS/VS2 MVS only)
If SESSIONC is being issued in an application program that is running in the privileged state under a TCB, BRANCH can be set to YES. See the RPL macro instruction for more information.

IBSQVAL=inbound sequence number
Indicates a value that is 1 less than the new value that ACF/VTAM is to begin assigning to inbound messages. The application program sets this field only if SET or TESTSET is also specified in the IBSQAC field. The IBSQVAL field may be modified by the response to the STSN command.

OBSQVAL=outbound sequence number
Indicates a value that is 1 less than the new value that ACF/VTAM is to begin assigning to outbound messages. The application program sets this field only if SET or TESTSET is also specified in the OBSQAC field. The OBSQVAL field may be modified by the response to the STSN command.

IBSQAC=SET|TESTSET|INVALID|IGNORE
OBSQAC=SET|TESTSET|INVALID|IGNORE
The IBSQAC (inbound sequence number action code) and the OBSQAC (outbound sequence number action code) fields designate the type of STSN command sent to the logical unit. The application program can set either or both of these fields. The effect of setting one is identical to the effect of setting the other, except that one applies to incoming messages and the other to outgoing messages. Figure 20 summarizes the STSN command types and the responses they can elicit from the logical unit.

IBSQAC=SET
OBSQAC=SET
Sets the inbound or outbound sequence number to the value specified in the IBSQVAL or OBSQVAL field. When SESSIONC is completed, the IBSQAC or OBSQAC field contains the logical unit's response to the new value: TESTPOS (agree) or RESET. (ACF/VTAM and certain logical units allow RESET to be specified. This setting is currently reserved by SNA for other than LU profile 0.)

IBSQAC=TESTSET
OBSQAC=TESTSET
Sets the inbound or outbound sequence number as does SET, but a wider range of responses to the new value are possible: TESTPOS (agree), TESTNEG (disagree), INVALID (don't know) or RESET. (ACF/VTAM and certain logical units allow RESET to be specified. This setting is currently reserved by SNA for other than LU profile 0.)

IBSQAC=INVALID
OBSQAC=INVALID
Is used to obtain the logical unit's version of the appropriate sequence number. Unlike SET and TESTSET, INVALID does not set the sequence number (INVALID is used when the application program has lost its version of the sequence number). The logical unit can reply to this type of STSN command in three ways: TESTNEG (my version enclosed), INVALID (don't know either), or RESET. (ACF/VTAM and certain logical units allow RESET to be specified. This setting is currently reserved by SNA for other than LU profile 0.)

IBSQAC=IGNORE
OBSQAC=IGNORE
Specifies that no action is to be taken for this sequence number. The logical unit should respond TESTPOS. If only one sequence number (either inbound or outbound) is to be acted on IGNORE must be specified for the other sequence number.

Example

```
SESSC1          SESSIONC     RPL=RPL1,CONTROL=STSN,QBSQAC=TESTSET,
                             OBSQVAL=(3),IBSQAC=IGNORE
```

SESSC1 sends an STSN command to a logical unit and sets the ACF/VTAM-supplied outbound (from the primary application program) sequence number to the value contained in register 3. The logical unit, noting that the type of STSN command is TESTSET, can indicate TESTPOS, TESTNEG, INVALID, or RESET with its response. The response information is available in RPL1 when SESSC1 is completed. If OBSQAC is found by the application program to be set to TESTPOS or TESTNEG, the OBSQVAL field contains the logical unit's version of the outbound sequence number. No action is taken by either end on the inbound (to the primary) sequence number.

Return of Status Information

After the SESSIONC operation is completed, the following RPL fields are set:

The value 37 (decimal) is set in the REQ field, indicating a SESSIONC request.

The value originally set in the USERFLD field of the NIB is set in the USER field of the RPL.

The IBSQAC and/or OBSQAC fields are usually set to TESTPOS, TESTNEG, INVALID, or RESET depending on the codes initially set in these fields when SESSIONC was issued. Figure 20 lists the codes that can be returned for each code initially set.

The IBSQVAL and/or OBSQVAL fields contain a sequence number when the IBSQAC and/or OBSQAC field is set to TESTPOS or TESTNEG. See Figure 20.

If an exception response is returned, the SSENSEI field may contain a system sense code. The possible codes (0, PATH, CPM, STATE, FI, and RR) are described near the end of Appendix C.

If an exception response is returned, the SSENSMI field may contain a system sense modifier value. This value, combined with the system sense code contained in the SSENSEI field, describes the specific type of error that caused the exception condition. See Appendix C. This value is tested as a 1-byte quantity.

If an exception response is returned, the USENSEI field may contain a user sense value. This value is tested as a 2-byte quantity.

The RTNCD and FDBK2 fields are set as indicated in Appendix C.

Registers 0 and 15 are also set as indicated in Appendix C.

SETLOGON–Reset an ACB's Logon Status

The SETLOGON macro instruction indicates whether or not ACF/VTAM is to queue and schedule pending logons for a primary application program's LOGON exit routine. It also indicates whether or not a secondary application program can request connection to a primary application program (REQSESS) or have its SCIP exit routine scheduled to accept session parameters.

There are three types of SETLOGON requests: QUIESCE, START, and STOP. The QUIESCE-START-STOP option code in SETLOGON's RPL determines which type is used. None of these three versions has any effect unless the ACB was opened with MACRF=LOGON set. For more information on the MACRF options, see the description of the ACB macro instruction.

Note: *An application program should not issue a SETLOGON macro instruction to prevent logon queuing when ACF/VTAM is halting; ACF/VTAM will automatically prevent any more logons from being queued for the application program.*

When issued by the primary end of the session:

The START version of SETLOGON causes any application program issuing INQUIRE (OPTCD=APPSTAT) to receive a return code indicating that your application program is accepting logons. The *first* SETLOGON (OPTCD=START) issued after OPEN causes ACF/VTAM to begin scheduling the LOGON exit routine for all automatic logons, for all new logons, and for any logons already queued. SETLOGON (OPTCD=START) reverses the effect of SETLOGON (OPTCD=STOP), but it does not reverse the effect of SETLOGON (OPTCD=QUIESCE).

The STOP version of SETLOGON does not close the logon queue; any CLSDST-initiated logons from other application programs or logons originating from terminals or logical units cause the LOGON exit routine to be scheduled. However, any application program issuing INQUIRE (OPTCD=APPSTAT) for your ACB receives a return code indicating that logons should not be directed at the ACB.

The QUIESCE version of SETLOGON causes ACF/VTAM to prevent logonqueuing. There is no way to reopen the logon queue short of closing the ACB and then reopening it. An application program might want to use this type of SETLOGON at the end of a day's work, prior to closing the ACB; this would give the application program a chance to handle its current load of logons without receiving new ones. Any application program issuing INQUIRE (OPTCD=APPSTAT) for your ACB will receive a return code indicating that your application program is shutting down and cannot receive logons.

When issued by the secondary end of the session:

The START version of SETLOGON permits the application program to request a connection to another application program (REQSESS) and to accept session parameters in its SCIP exit routine (OPNSEC).

Name	*Operation*	*Operands*
[symbol]	SETLOGON	RPL=rpl address [,rpl field name=new value] . . .

RPL=rpl address

Indicates the location of the RPL that in turn indicates the ACB whose logon status is to be changed.

rpl field name=new value

Indicates an RPL field to be modified, and the new value that is to be contained or represented within it. If you wish to avoid the possibility of program reassembly following future releases of ACF/VTAM, set the RPL field with MODCB macro instructions rather than with the SETLOGON macro instruction.

Format: For *rpl field name* code the keyword of the RPL macro instruction operand that corresponds to the RPL field being modified. The *new value* can be any value that is valid for that operand in the RPL macro instruction, or it can indicate a register.

The following RPL operands apply to a SETLOGON macro instruction:

ACB=acb address

Indicates the ACB that identifies the application program whose logon queuing status is being changed.

ECB=ecb address
ECB=INTERNAL
EXIT=rpl exit routine address

Indicates the action to be taken by ACF/VTAM when an asynchronous (OPTCD=ASY) SETLOGON macro instruction is completed. The macro instruction is completed immediately, subject to delays due to possible storage shortages. If EXIT is specified, the RPL exit routine is scheduled. Otherwise, the ECB is posted, and CHECK or WAIT must be used to determine when posting occurs.

If ECB=INTERNAL is specified and *synchronous* handling (SYN option) is used, ACF/VTAM uses the ECB-EXIT field in the RPL as an *internal* ECB and clears it. If *asynchronous* handling (ASY option) is used, ACF/VTAM will also use the ECB-EXIT field in the RPL as an internal ECB, but the user must issue a CHECK macro instruction to check and clear it. If neither the ECB nor EXIT keywords are specified, ACF/VTAM treats the field as if ECB=INTERNAL had been specified. See the RPL macro instruction for more information.

OPTCD=SYN|ASY

When SYN is set, control is returned to the application program immediately, subject to possible delays due to storage shortages. When ASY is set, control is immediately returned to the application program, regardless of possible delays in the completion of the macro instruction. When the macro instruciton is completed, the ECB is posted or the RPL exit routine is scheduled, as indicated by the ECB-EXIT field.

OPTCD=QUIESCE|START|STOP

OPTCD=START allows an application program acting as the primary end of the session to have it's LOGON exit routine scheduled to accept logons. START also allows an application program acting as the secondary end of a session to issue a REQSESS macro instruction and have its SCIP exit routine scheduled to receive session parameters.

OPTCD=STOP prevents an application program from issuing a REQSESS macro instruction or having its SCIP exit routine receive session parameters. While an application program acting as the primary end of the session can still have logons queued for it, if another application program requests application status information (INQUIRE OPTCD=APPLSTAT), it will be told that the application program is temporarily not accepting logons.

OPTCD=QUIESCE prevents an application program from issuing a REQSESS macro instruction or having its SCIP exit routine receive session parameters. QUIESCE also permanently prevents any further queuing of logons for an application program acting as the primary end of the session.

Example

```
          OPEN       ACB1
BEGIN     SETLOGON   RPL=RPL1,ACB=ACB1,OPTCD=START
          .
          .
          .
TOOMANY   SETLOGON   RPL=RPL1,ACB=ACB1,OPTCD=STOP
          .
          .
          .
RESUME    SETLOGON   RPL=RPL1,ACB=ACB1,OPTCD=START
          .
          .
          .
NOMORE    SETLOGON   RPL=RPL1,ACB=ACB1,OPTCD=QUIESCE
          .
          .
          .
ACB1      ACB        APPLID=APPLNAME,MACRF=LOGON
APPLNAME  DC         X'05'
          DC         CL5'STOCK'
```

Before BEGIN is executed, the application program's LOGON exit routine cannot be scheduled. Once BEGIN has completed however, STOCK's LOGON exit routine is scheduled as each logon occurs. (If the user has defined a number of automatic logons, they will each cause the LOGON exit routine to be scheduled in turn.) STOCK can also enter into a session as the secondary end at the time by issuing a REQSESS macro.

TOOMANY causes ACF/VTAM to flag the application program as temporarily unwilling to accept logons. It does not prevent logon requests from being queued for STOCK. If an application program that wants to direct a logon at ACB1 first issues INQUIRE (OPTCD=APPSTAT), it will receive a return code indicating that logons should not be issued for STOCK. The IBM-supplied network solicitor program always issues this type of INQUIRE and honors the flag set by TOOMANY.

RESUME reverses the effect of TOOMANY; application programs issuing INQUIRE (OPTCD=APPSTAT) will receive a return code indicating that logons are being accepted (the same return code that results if INQUIRE is issued after BEGIN but before TOOMANY). TOOMANY also prevents STOCK from establishing any more sessions as a secondary end of session.

NOMORE closes the logons queue. An INQUIRE issued by another application program would indicate this, and any attempt to direct a logon request to STOCK would fail. If any logons are queued when QUIESCE is issued, they remain queued.

Return of Status Information

After SETLOGON processing is finished, the following RPL fields are set:

If OPTCD=QUIESCE, the number of logons queued for the ACB is set in the RECLEN field. This quantity can be examined with the SHOWCB macro instruction (a byte work area is required) or the TESTCB macro instruction.

If this is the first SETLOGON (OPTCD=START) request issued after opening the ACB, and a temporary storage shortage error occurs while attempting to schedule the LOGON exit routine, the SETLOGON will fail (RTNCD=8,FDBK2=0). The LOGON exit routine will have been successfully scheduled for all logons prior to the storage shortage. Any remaining automatic logons will not be processed by additional SETLOGON requests. The application program can request that the network operator issue a VARY command for each of the logons. This situation is caused by allocating too little storage for the user exit control blocks and may be corrected by the network operator when ACF/VTAM is started by increasing the value of the UECBUF parameter.

The value 21 (decimal) is set in the REQ field, indicating a SETLOGON request.

The RTNCD and FDBK2 fields are set as indicated in Appendix C.

Registers 0 and 15 are also set as indicated in Appendix C.

SHOWCB–Extract the Contents of Control Block Fields

SHOWCB extracts the contents of one or more ACB, EXLST, RPL, or NIB fields and places them into an area designated by the application program. The SHOWCB user specifies the address of a control block and the names of the fields whose contents are to be extracted. The field names are the same as the keywords of the ACB, EXLST, RPL, and NIB macro instructions. Any keyword of these macro instructions can be used as a field name in the SHOWCB macro instruction. See Appendix E for a list and explanation of the valid formats in which the SHOWCB operands can be specified.

Control block fields that can be operated on by SHOWCB are not limited, however, to fields that can be set by the application programmer in the ACB, EXLST, RPL, and NIB macros. Several additional fields whose contents are set only by ACF/VTAM can also be displayed with SHOWCB. All of the fields applicable for SHOWCB are shown in Figure 21 at the end of the SHOWCB macro instruction description.

The user of SHOWCB must use the AREA and LENGTH operands to indicate the location and length of the area where the fields will be placed. The content of each field is placed there contiguously, in the order indicated by the FIELDS operand. If the area is too short to hold all of the fields, SHOWCB does not modify the area but returns error codes in register 0 and 15. Figure 21 shows the required lengths for all the control block fields that can be displayed with SHOWCB.

List, generate, and execute forms of the SHOWCB macro instruction are available; they are designated by the MF operand.

Name	*Operation*	*Operands*
[symbol]	SHOWCB	AM=VTAM [{ , ACB=acb address , EXLST=exit list address , RPL=rpl address , NIB=nib address }] , FIELDS=field name |(field name,...) , AREA=data area address , LENGTH=data area length [, MF=list. generate, or execute form parameters]

AM=VTAM

Identifies this macro instruction as a macro instruction capable of manipulating an ACF/VTAM control block. This operand is required.

ACB=acb address
EXLST=exit list address
RPL=rpl address
NIB=nib address

Indicates the type and location of the control block whose fields are to be extracted. One of these operands must be specified unless a control block *length* (and only the length) is being extracted. That is, if FIELDS=ACBLEN, FIELDS=EXLLEN, FIELDS=RPLLEN, or FIELDS=NIBLEN is specified, no specific control block need be specified.

FIELDS=field name|(field name,...)

Indicates the control block field or fields whose contents are to be extracted.

For *field name,* code one of the field names that appear in the first column of the table that appears at the end of this macro instruction description (Figure 21). Most of these field names correspond to keywords of the ACB, EXLST, RPL, and NIB macro instructions. Only those fields associated with *one* control block can be specified (those for the control block whose address is supplied in the first operand).

AREA=data area address

Indicates the location of the storage area in the application program where the contents of the control block field or fields are to be placed. This work area must begin on a fullword boundary.

LENGTH=data area length

Indicates the length (in bytes) of the storage area designated by the AREA operand.

If this length is insufficient, SHOWCB returns a value of 4 in register 15 (unsuccessful completion) and a value of 9 in register 0 (insufficient length). The required length for each field is shown in the second column of the table that appears at the end of this macro instruction description.

MF=list, generate, or execute form parameters

Indicates that a list, generate, or execute form of SHOWCB is to be used. Omitting this operand causes the standard form of SHOWCB to be used. See Appendix F for a description of the nonstandard forms of SHOWCB.

Examples

```
SHOW1       SHOWCB      NIB=NIB1,FIELDS=NAME,AREA=NAME1,
                        LENGTH=8,AM=VTAM
```

SHOW1 extracts the contents of NIB1's NAME field and places it in NAME1.

```
SHOW2       SHOWCB      RPL=RPL1,FIELDS=(FDBK,ARG,AREA,RECLEN),
                        AREA=(3),LENGTH=16,AM=VTAM
```

SHOW2 extracts the contents of RPL1's FDBK, ARG, AREA, and RECLEN fields and places them (in that order) in a storage area. The address of this storage area must be in register 3 when SHOW2 is executed. Note that LENGTH indicates a storage area length great enough to accomodate all four fields.

Return of Status Information

After SHOWCB processing is completed, ACF/VTAM sets register 15 to indicate successful or unsuccessful completion. If the operation is completed successfully, register 15 is set to 0 and register 0 contains the total number of bytes that SHOWCB extracted and placed in the work area. If the operation completes unsuccessfully, register 15 is set to either 4, 8, or 12 (DOS/VS only). If it is set to 4 or 12, register 0 is also set indicating the specific nature of the error (see Appendix D).

Control Block Fields Applicable for SHOWCB

The field names shown in the first column of Figure 21 are the values that can be supplied for the FIELDS operand of the SHOWCB macro instruction. The lengths shown in the second column are the number of bytes of storage that must be reserved for each field; the sum of all the fields to be displayed by SHOWCB should be the value for the LENGTH operand.

ACB Fields

Field Name	*Length (bytes)*	*Description*
APPLID	4	Address of application program's symbolic name
PASSWD	4	Address of password
EXLST	4	Address of exit list
ACBLEN	2	Length of ACB, in bytes
ERROR	1	OPEN and CLOSE completion code

EXLST Fields

Field Name	*Length (bytes)*	*Description*
LERAD	4	Address of exit routine
SYNAD	4	
DFASY	4	
RESP	4	
SCIP	4	
TPEND	4	
RELREQ	4	
LOGON	4	
LOSTERM	4	
ATTN	4	
NSEXIT	4	
EXLLEN	2	Length of exit list, in bytes

RPL Fields

Field Name	*Length (bytes)*	*Description*
ACB	4	Address of ACB
NIB	4	Address of NIB
ARG	4	CID of terminal
AREA	4	Address of I/O work area
AREALEN	4	Length of AREA work area, in bytes
RECLEN	4	Length of data in AREA work area, in bytes
AAREA	4	Address of alternate I/O area
AAREALN	4	Length of AAREA, in bytes
ARECLEN	4	Length of data placed in alternate I/O area
ECB	4	ECB or address of an ECB
EXIT	4	Address of RPL exit-routine
RTNCD	4	Recovery return code (1 byte, right-adjusted)
FDBK2	4	Specific error return code (1 byte, right-adjusted)
FDBK	4	Status information about successful input operations (1 byte, right-adjusted)
USER	4	The data originally placed in a NIB's USERFLD field
REQ	4	Request-type code (1 byte, right-adjusted)
RPLLEN	4	Length of RPL, in bytes (1 byte, right-adjusted)
SENSE	4	Device sense and status (2 bytes, right-adjusted)
SEQNO	4	Sequence number (2 bytes, right-adjusted)
SSENSMO	4	Outbound system sense modifier (1 byte, right-adjusted)
USENSEO	4	Outbound user sense (2 bytes, right-adjusted)
SSENSMI	4	Inbound system sense modifier (1 byte, right-adjusted)
USENSEI	4	Inbound user sense (2 bytes, right-adjusted)
IBSQVAL	4	Inbound sequence number for STSN command (2 bytes, right-adjusted)
OBSQVAL	4	Outbound sequence number for STSN command (2 bytes, right-adjusted)
SIGDATA	4	Information included with signal command

NIB Fields

Field Name	*Length (bytes)*	*Description*
NAME	8	Symbolic name of terminal
USERFLD	4	Arbitrary data associated with NAME
CID	4	Communication ID
NIBLEN	4	Length of NIB, in bytes
DEVCHAR	8	Device characteristics (see Appendix H)
EXLST	4	Address of NIB-oriented exit list
RESPLIM	4	Maximum number of concurrent SEND (POST=RESP) macros
LOGMODE	8	Logon mode
BNDAREA	4	Address of bind area

Figure 21. Control Block Fields That Can Be Extracted with SHOWCB

SIMLOGON–Generate a Simulated Logon

A SIMLOGON is a request that ACF/VTAM check the availability of one or more terminals or logical units and, if available, to generate a logon on behalf of that terminal or logical unit as though the logon had come from the terminal or logical unit.

The application program that issues the SIMLOGON macro instruction can only participate as the primary end of that session. The terminal or logical unit on whose behalf the logon was simulated is the secondary end of the session.

By issuing SIMLOGON, the application program can use its LOGON exit routine to service simulated logons that it generates on behalf of a terminal or logical unit. The effect of the simulated logon is to schedule the ACB's LOGON exit routine. It is the subsequent OPNDST (OPTCD=ACCEPT) that causes the connection to occur. SIMLOGON is equivalent to an OPNDST connection request with an ACQUIRE option, except that the LOGON exit routine handles the connection request.

As is true with OPNDST (OPTCD=ACQUIRE), the terminal or logical unit may already be connected to another application program when you issue SIMLOGON. To cause the current owner's RELREQ exit routine to be scheduled, use the OPTCD=(Q,RELRQ) form of SIMLOGON (described below).

Note: *An application program should not issue SIMLOGON (or OPNDST with OPTCD=ACCEPT) if the ACB was opened with MACRF=NLOGON, or if no LOGON exit routine is available when SIMLOGON is executed.*

The LOGON exit routine is scheduled as soon as the terminal or logical unit is available for use by the application program. If it is a dial-in terminal or logical unit, the exit is scheduled when the terminal or logical unit dials in. For dial-out terminals and logical units, the LOGON exit routine is scheduled as soon as it becomes available, but the terminal or logical unit is not actually dialed until the OPNDST has been issued (for logical units) or until the first I/O request is directed at the terminal (for BSC and start-stop terminals).

The SIMLOGON macro is the only way that an application program can acquire a dial-in terminal or logical unit because SIMLOGON is the only form of acquisition that can be queued (OPTCD=Q).

If a terminal or logical unit has been defined as dial-in by the user (CALL=IN specified for the LINE or GROUP definition statement), a SIMLOGON request with OPTCD=Q is completed when the terminal or logical unit dials in. For a logical unit, a SIMLOGON request with OPTCD=Q schedules the LOGON exit routine immediately. If the logical unit has already dialed in, the connection will be completed successfully; if the logical unit has not dialed in, the OPNDST will fail. Therefore, it is advisable to specify OPTCD=NQ for dial-in logical units. For a dial-in BSC terminal, the first I/O request following connection must be a SOLICIT or READ (OPTCD=SPEC) request.

If you acquire a dial-in terminal without the ID verification feature, you can establish the identity of the terminal only by issuing I/O requests and obtaining information from the terminal operator. If the terminal has the ID verification feature, INQUIRE (OPTCD=BSCID) can be used to obtain the terminal's identification sequence.

The SIMLOGON macro instruction can optionally be used to send a logon message along with the !ogon. See the AREA and RECLEN operands below for details.

The use of SIMLOGON must be authorized for the application program by the user.

Name	*Operation*	*Operands*
[symbol]	SIMLOGON	RPL=rpl address [,rpl field name=new value] . . .

RPL=rpl address

Indicates the location of the RPL to be used during SIMLOGON processing. When SIMLOGON is executed, the NIB field of this RPL should contain the address of a NIB or list of NIBs whose associated terminals and logical units are to be considered as the sources of the logons. The ACB field of the RPL must contain the address of the ACB to which the simulated logon is to be directed.

rpl field name=new value

Indicates an RPL field to be modified and the new value that is to be contained within it. If you wish to avoid the possibility of program reassembly following future releases of ACF/VTAM, set the RPL field with MODCB macro instructions rather than with the SIMLOGON macro instruction.

Format: For *rpl name* code the keyword of the RPL macro instruction operand that corresponds to the RPL field to be modified. The *new value* can be any value that is valid for that operand in the RPL macro instruction, or it can indicate a register.

The following RPL operands apply to a SIMLOGON macro instruction:

ACB=acb address

Indicates the ACB that identifies the application program to which the simulated logon is to be directed.

NIB=nib address

Indicates the NIB whose NAME field identifies the terminal or logical unit for which the simulated logon is to be generated and whose LOGMODE field specifies the logon mode name to be used. If the NIB field contains the address of a list of NIBs, logons will be generated on behalf of all the terminals or logical units of that list.

AREA=logon message address

Indicates the location of the data that ACF/VTAM is to pass to the application program as a logon message. The content and format of the data is determined by the sending and receiving application programs. The logon message is equivalent to the user data portion of an Initiate Self or a character coded logon. The other application program issues INQUIRE (OPTCD=LOGONMSG or SESSPARM) to get this data.

RECLEN=logon message length

Indicates how many bytes of data are to be passed as the logon message. If no logon message is to be sent, RECLEN should be set to 0.

ECB=ecb address
ECB=<u>INTERNAL</u>
EXIT=rpl exit routine address

Indicates the action to be taken by ACF/VTAM when an asynchronous (OPTCD=ASY) SIMLOGON macro instruction is completed. The request is completed immediately, subject to delays due to possible storage shortages. If the Q option (described below) is used, the completion of the *operation* (that is, the generation of the logon and scheduling of the LOGON exit routine) may occur at a much later time; this is different for SNA and non-SNA terminals. When the LOGON exit routine is scheduled, the SIMLOGON is posted complete. If EXIT is specified, the RPL exit routine is scheduled. Otherwise the ECB is posted, and CHECK or WAIT must be used to determine when the posting occurs.

If ECB=INTERNAL is specified and *synchronous* handling (SYN option) is used, ACF/VTAM uses the ECB-EXIT field in the RPL as an *internal* ECB and clears it. If *asynchronous* handling (ASY option) is used, ACF/VTAM will also use the ECB-EXIT field in the RPL as an internal ECB, but the user must issue a CHECK macro instruction to check and clear it. If neither the ECB nor EXIT keywords are specified, ACF/VTAM treats the field as if ECB=INTERNAL had been specified. See the RPL macro instruction for more information.

OPTCD=SYN | ASY
When the SYN option code is set, control is returned to the application program when the macro instruction has been completed. When ASY is set, control is returned as soon as ACF/VTAM has accepted the request. Once the macro instruction has been completed, the ECB is posted or the RPL exit routine is scheduled, as indicated by the setting of the ECB-EXIT field.

OPTCD=CONANY | CONALL
When CONANY is set, a logon is generated for the first available terminal or logical unit in the NIB list. Control is passed to the application program's LOGON exit routine, if one exists, when this logon has been generated. If the Q option is set, a logon will be generated when the first terminal or logical unit becomes available. If NQ is set and a terminal or logical unit is available, the logon is generated immediately; if none is available, a logon is not generated.

When CONALL is set, a logon is generated for each available terminal or logical unit in the NIB list. If Q is set, logons will be generated as each becomes available. If NQ is set and all the terminals and logical units are available, the logons will be generated immediately; however, if all the terminals and logical units are not available, no logons are generated.

If there is only one NIB, the setting of this option code does not matter. See the *Macro Language Guide* for more information on specific uses of CONANY and CONALL with OPNDST and SIMLOGON.

OPTCD=Q | NQ
When Q is set, the LOGON exit routine is scheduled as the terminals or logical units become available. When NQ is set, the SIMLOGON operation fails if they are not immediately available.

OPTCD=RELRQ|NRELRQ
This option code is meaningful only if the Q option code is set. When RELRQ is set, and if the terminal or logical unit for which the logon is to be generated is already in session with another application program, ACF/VTAM invokes that application program's RELREQ exit routine. If NRELRQ is set, the other application program is not notified of your request for its terminal or logical unit.

Example

```
SIM1        SIMLOGON    RPL=RPL1,ACB=ACB1,NIB=NIBLIST1,
                        AREA=LGNMSG,RECLEN=60,EXIT=CHECKPGM,
                        OPTCD=(ASY,CONALL,NRELRQ,Q)
            .
            .
            .
LGNMSG      DC          CL60'LOGON FROM NIBLIST1 STATION'
ACB1        ACB         MACRF=LOGON
NIBLIST1    NIB         NAME=STATIONA,MODE=RECORD,LISTEND=NO,
                        LOGMODE=BATCH
            NIB         NAME=STATIONB,MODE=RECORD,LISTEND=NO
            NIB         NAME=STATIONC,MODE=RECORD,LISTEND=YES
```

SIM1 generates simulated logons for ACB1 from all of the logical units represented in NIBLIST1. Each logon will be accompanied by a 60-byte logon message taken from LGNMSG. The logon mode for STATIONA is BATCH; STATIONB and STATIONC will use a default logon mode. The CONALL option code indicates that requests are to be generated for all the logical units represented in the list. NRELRQ indicates that if any of the logical units of NIBLIST1 are connected to an ACB other than ACB1, that ACB's RELREQ exit routine is not to be scheduled. After the SIM1 operation is completed, control is transferred to CHECKPGM.

Return of Status Information

When the SIMLOGON operation is completed, the following RPL fields are set:

The value 22 (decimal) is placed in the REQ field, indicating a SIMLOGON request.

The RTNCD and FDBK2 fields are set as indicated in Appendix C.

Registers 0 and 15 are also set as indicated in Appendix C.

SOLICIT–Obtain Data from a Terminal (Basic Mode Only)

The SOLICIT macro instruction obtains data from one or more connected BSC or start-stop terminals or local 3270s. A subsequent READ macro instruction is required to move the data from ACF/VTAM buffers to the input area provided by the application program.

SOLICIT performs the preparation or polling required to obtain the data and supplies appropriate line-control responses as blocks of data are obtained. (SOLICIT does not unlock the keyboard of a 3270 display station; this can be done with a WRITE macro instruction if an unlock-keyboard control character is included in the data stream.)

The SOLICIT macro instruction is completed as soon as ACF/VTAM has accepted the request. The actual solicitation of data continues as indicated by the BLOCK-MSG-TRANS-CONT processing option used when the terminal being solicited was connected. The effect of these options is summarized below; see the NIB macro instruction description (including Figure 11) for more information.

PROC=BLOCK: One block of data ending in an EOB line control character (for start-stop devices) or an ETB line-control character (for binary synchronous devices) is obtained.

PROC=MSG: Blocks of data are continuously obtained until a block containing an EOT character (for start-stop devices) or an ETX character (for binary synchronous devices) is received. In effect, this means that data is solicited from the terminal until an entire message has been received.

PROC=TRANS: Blocks of data are continuously obtained until a block containing an EOT character is recognized. In effect, this means that data is solicited from the terminal until an entire transmission has been received.

PROC=CONT: Blocks of data are continuously solicited from the terminal. This solicitation continues indefinitely, unless the request is canceled with the RESET macro instruction, or the terminal becomes disconnected from the program.

SOLICIT does not obtain data from a terminal if the application program has not read all previously solicited data, or if the CS option code was in effect for the last I/O request directed at the terminal.

Any I/O errors that occur during solicit operations for a given terminal become known to the program only when it next issues a READ or WRITE macro for that terminal.

Name	*Operation*	*Operands*
[symbol]	SOLICIT	**RPL=rpl address** [, rpl field name=new value]...

RPL=rpl address

Indicates the location of the RPL that governs the solicit operation.

rpl field name=new value

Indicates an RPL field to be modified and the new value that is to be contained or represented within it. If you wish to avoid the possibility of program reassembly following future releases of ACF/VTAM, set the RPL field with MODCB macro instructions rather than with the SOLICIT macro instruction.

Format: For *rpl field name,* code the keyword of the RPL macro instruction operand that corresponds to the RPL field being modified. ARG can also be coded. The *new value* can be any value that is valid for that operand in the RPL macro instruction, or it can indicate a register. The value supplied for the ARG keyword must indicate a register.

The following RPL operands apply to a SOLICIT macro instruction:

ACB=acb address

Indicates the ACB that identifies the application program.

ARG=(register)

If a specific terminal is to be solicited, the ARG field of the RPL must contain the CID of the session with that terminal. ARG=(register) is indicated here because register notation must be used to place the CID in the RPL with this SOLICIT macro instruction. ARG does not apply to SOLICIT when the ANY option code is set.

ECB=ecb address
ECB=INTERNAL
EXIT=rpl exit routine address

Indicates the action to be taken by ACF/VTAM when an asynchronous (OPTCD=ASY) SOLICIT macro instruction is completed. The macro instruction is completed immediately, subject to delays due to possible storage shortages. If EXIT, LEVENT, or GEVENT is specified, the RPL exit routine is scheduled. Otherwise the ECB is posted, and CHECK or WAIT must be used to determine when posting occurs.

If ECB=INTERNAL is specified and *synchronous* handling (SYN option) is used, ACF/VTAM uses the ECB-EXIT field in the RPL as an *internal* ECB and clears it. If *asynchronous* handling (ASY option) is used, ACF/VTAM will also use the ECB-EXIT field in the RPL as an internal ECB, but the user must issue a CHECK macro instruction to check and clear it. If neither the ECB nor EXIT keywords are specified, ACF/VTAM treats the field as if ECB=INTERNAL had been specified. See the RPL macro instruction for more information.

OPTCD=SYN | ASY

When the SYN option code is set, control is returned to the application program when the SOLICIT macro instruction has been completed. When ASY is set, control is returned when the macro instruction has been accepted. Although a SOLICIT macro instruction is usually completed immediately after the macro instruction has been accepted, a storage shortage could cause a delay. Upon return of control from an asynchronous SOLICIT, the ECB is posted or or the RPL exit routine is scheduled, as indicated by the setting of the ECB-EXIT field.

OPTCD=CA | CS

When the CA option code is set, the data obtained from the solicit operation is available for a subsequent READ (OPTCD=ANY). When CS is set instead, and the SPEC option code is also set, only a subsequent READ (OPTCD=SPEC) can be used to retrieve the data obtained by the solicit operation. If the ANY option code is set, the CA-CS option code is treated as though CA had been specified, regardless of the actual setting.

OPTCD=SPEC|ANY
When the SPEC option code is set, data is solicited from only one terminal; namely the session whose CID has been placed in the ARG field of the SOLICIT macro's RPL. When ANY is set, data is solicited from all terminals that are connected to the program and are not already being solicited. If only one terminal is available for solicitation, avoid using SOLICIT (OPTCD=ANY). It will work, but it takes more time than SOLICIT (OPTCD=SPEC).

Examples

```
SLCT1         SOLICIT       RPL=RPL1,OPTCD=ANY
               .
               .
               .
RPL1          RPL           ACB=ACB1
```

SLCT1 causes data to be solicited from any terminal that has been connected through ACB1 and is not currently engaged in communication with the application program.

```
SLCT2         SOLICIT       RPL=RPL2,OPTCD=SPEC,ARG=(6)
               .
               .
               .
RPL2          RPL           ACB=ACB1
```

SLCT2, which represents a more likely use of SOLICIT, causes data to be solicited from the terminal whose CID is in RPL2's ARG field.

Return of Status Information

Control is returned to the program when ACF/VTAM has accepted the request, not when the actual I/O activity is eventually completed. After control has been returned, these RPL fields are set:

If OPTCD=SPEC is specified for in SOLICIT, the USER field is set. When a NIB is created, the application program has the option of specifying any value in the USERFLD field of that NIB. When the SOLICIT macro instruction is subsequently issued for the terminal connected with that NIB, ACF/VTAM obtains the value that was set in the USERFLD field and places it in the RPL's USER field.

The value 30 (decimal) is set in the REQ field, indicating a SOLICIT request.

The RTNCD and FDBK2 fields are set as indicated in Appendix C.

Registers 0 and 15 are also set as indicated in Appendix C.

TERMSESS–Request That a Connection to a Primary Application Program Be Terminated (Record Mode Only)

When the secondary application program wishes to end its session with a primary application program, it issues a TERMSESS macro instruction. The TERMSESS request generates a Terminate command.

The TERMSESS macro instruction may request either conditional or unconditional termination. If the TERMSESS macro instruction is issued with OPTCD= COND(conditional termination), ACF/VTAM schedules the primary application's LOSTERM exit routine with a return code of 32 (decimal). This allows the primary application program to determine if and when it will issue a CLSDST macro instruction to terminate the session. IF TERMSESS is issued with OPTCD=UNCOND (unconditional termination), ACF/VTAM schedules the primary application program's LOSTERM exit routine with a return code of 20 (decimal). ACF/VTAM also terminates the session without waiting for a CLSDST macro instruction to be issued by the primary application program. The primary application must still issue a CLSDST macro instruction.

Name	*Operation*	*Operands*
[symbol]	**TERMSESS**	**RPL=rpl address** **[, rpl field name=new value**

RPL=rpl address
Indicates the location of the RPL to be used during TERMSESS processing.

rpl field name=new value
Indicates the RPL field to be modified and the new value that is to be contained within it. If you wish to avoid the possibility of program reassembly in future releases of ACF/VTAM, set the RPL field with MODCB macro instructions rather than with the TERMSESS macro instruction.

Format: For *rpl field name,* code the keyword of the RPL macro instruction operand that corresponds to the RPL field to be modified. The *new value* can be any value that is valid for that operand in the RPL macro instruction, or it can be a register that contains the new value.

The following RPL operands apply to the TERMSESS macro instruction.

ACB=acb address
Indicates the ACB that identifies the application program that is requesting termination.

ARG=(register)
Indicate the register containing the CID of the session to be terminated.

NIB=nib address
Indicates the NIB whose NAME field indicates the primary application program to be disconnected. If the NIB field does not contain a NIB address, the ARG field must contain the CID for the session.

ECB=ecb address
EXIT=exit routine address
ECB=<u>INTERNAL</u>
Indicates the action to be taken when an *asynchronous* (OPTCD=ASY) TERMSESS macro instruction is completed. The macro instruction is completed when the LOSTERM exit routine of the receiving application program has been scheduled. If EXIT is specified, the RPL exit routine is scheduled. Otherwise, the ECB is posted, and CHECK or WAIT must be used to determine when posting occurs.

If ECB=INTERNAL is specified and synchronous handling (OPTCD=SYN) is used, ACF/VTAM uses the ECB=EXIT field in the RPL as an *internal* ECB and clears it. If *asynchronous* handling (OPTCD=ASY) is used, ACF/VTAM uses the ECB-EXIT field as an internal ECB, but the user must issue a CHECK macro instruction to check and clear it. If neither the ECB nor the EXIT keyword is specified, ACF/VTAM treats the field as if ECB=INTERNAL had been specified. See the RPL macro instruction for more information.

OPTCD=SYN | ASY
When SYN is set, control is returned to the application program that issued TERMSESS when the TERMSESS macro instruction is completed. When ASY is set, control is returned as soon as ACF/VTAM has accepted the TERMSESS request. Once the TERMSESS macro instruction is completed (that is, after the Terminate command has been sent), the ECB is posted or the RPL exit routine is scheduled as indicated in the ECB-EXIT field. See the RPL macro instruction for more information.

OPTCD=COND | UNCOND
If OPTCD=COND is set, the application program acting as the primary end of the session may take any action it desires, including issuing a CLSDST macro instruction if and when it wishes to terminate the session. If OPTCD=UNCOND is set, ACF/VTAM automatically terminates the session and sends an Unbind command to the secondary application program. The primary applicaton program must then terminate the session by issuing a CLSDST macro instruction.

Examples

```
TERMRTN    TERMSESS    RPL=RPL1,NIB=NIB2,OPTCD=(ASY,COND),EXIT=TERMFINS
           .
           .
           .
NIB2       NIB         NAME=PRIAPPL
```

TERMRTN causes the LOSTERM exit routine of PRIAPPL (the application program acting as the primary end of the session) to be scheduled with a return code of 20 (decimal). PRIAPPL may ignore the request or issue a CLSDST macro instruction when it wishes to disconnect the application program that issued the TERMSESS macro instruction. Upon completion of the TERMSESS macro instruction, the RPL exit routine, TERMFINS, is scheduled.

Return of Status Information

After the TERMSESS macro instruction is completed, the following RPL fields are set:

The value 44 (decimal) is set in the REQ field, indicating a TERMSESS request.

If the TERMSESS macro instruction returns an error code, the SSENSEI, SSENSMI, and USENSEI fields may be set indicating system sense information, system sense modifier information, and user sense information. There is more information about these fields in Appendix C.

The RTNCD and FDBK2 fields are set as indicated in Appendix C.

Registers 0 and 15 are also set as indicated in Appendix C.

TESTCB–Test the Contents of a Control Block Field

TESTCB compares the contents of a specified ACB, RPL, EXLST, or NIB field with a value supplied with the macro instruction, and sets the PSW condition code accordingly.

The user of the TESTCB macro instruction indicates a particular control block, identifies a single field within that control block, and supplies the value against which the contents of that field are to be tested. Figure 22 lists the control block fields that can be tested.

The operands for testing control block fields are used in much the same way as operands for modifying or setting control block fields in macros like MODCB or GENCB. For example, RECLEN=200 in a MODCB macro places the value 200 in the RECLEN field of an RPL; if RECLEN=200 is specified in a TESTCB macro instruction, the contents of the RECLEN field are compared with the value 200. See Appendix E for a list and explanation of the various formats in which the TESTCB operands can be coded.

The test performed by TESTCB is a logical comparison between the field's actual content and the specified value. The condition code indicates a high, equal, or low result (with the actual content considered as the "A" comparand of the "A:B" comparison). The TESTCB macro instruction can be followed by any branching instructions that are valid following a compare instruction.

TESTCB can be used to test any control block field whose content can be set by the application program, as well as some of the control block fields whose contents are set by ACF/VTAM. The explanation below of the *field name* operand indicates the fields that can be tested.

With the ERET operand of the TESTCB macro instruction, the application program can supply the address of an error-handling routine. This routine is invoked if some error condition prevents the test from being performed correctly.

List, generate, and execute forms of TESTCB are available; they are designated by the MF operand.

Name	*Operation*	*Operands*
[symbol]	**TESTCB**	**AM=VTAM** $\left[\left\{\begin{array}{l}\textbf{, ACB=acb address}\\ \textbf{, EXLST=exit list address}\\ \textbf{, RPL=rpl address}\\ \textbf{, NIB=nib address}\end{array}\right\}\right]$, field name=test value [, ERET=error exit routine address] [, MF=list, generate, or execute form parameters]

AM=VTAM

Identifies this macro instruction as an ACF/VTAM macro instruction. This operand is required.

ACB=acb address
EXLST=exlst address
RPL=rpl address
NIB=nib address

Indicates the type and location of the control block whose field is to be tested.

This operand is normally required, but can be omitted if a control block *length* is being tested. (Control block lengths are tested by specifying ACBLEN, EXLLEN, RPLLEN, or NIBLEN for the TESTCB macro instruction). Since every control block of a given type is the same length for a given operating system, it is not necessary for you to indicate *which* ACB, EXLST, RPL, or NIB you want to know the length of.

field name=test value

Indicates a control block field and a value that its contents are to be tested against. For *field name,* code one of the field names that appear in the table at the end of this macro instruction description (Figure 22).

The rules for coding *test value* are defined and summarized in Appendix E.

```
Examples:     TESTCB    ACB=ACB1,PASSWD=(6),AM=VTAM
              TESTCB    EXLST=EXLST1,SYNAD=SYNADPGM,AM=VTAM
              TESTCB    RPL=RPL1,AREALEN=64,AM=VTAM
              TESTCB    NIB=NIB2,PROC=SYSRESP,AM=VTAM
              TESTCB    NIB=NIB1,LISTEND=YES,AM=VTAM

              TESTCB    ACB=ACB1,OFLAGS=OPEN,AM=VTAM
              TESTCB    RPL=RPL1,RPLLEN=38,AM=VTAM
```

RPL option codes or NIB processing options (including combinations of them) can also be tested. The test results in an equal condition code if *all* of the specified options are present. The first example below shows how to test for the presence of the SPEC, CS, *and* BLK option codes of an RPL. The second example illustrates how to code a similar test for the MSG, CONFTXT, *and* MONITOR processing options of a NIB.

```
Examples:     TESTCB    RPL=RPL1,OPTCD=(SPEC,CS,BLK),AM=VTAM
              TESTCB    NIB=NIB1,PROC=(MSG,CONFTXT,MONITOR),
                        AM=VTAM
```

ERET=error exit routine address

Indicates the location of a routine to be entered if TESTCB processing encounters a situation that prevents it from performing the test.

When the ERET routine receives control, register 15 contains a return code. If this return code indicates an error, register 0 will contain an error return code that indicates the nature of the error. These return codes are described in Appendix D (and are summarized below). Register 14 contains the address of the ERET exit routine and the remaining registers are unchanged.

Note: *If this operand is omitted, the program instructions that follow the TESTCB macro instruction should check register 15 to determine whether an error occurred (indicating that the PSW condition code is meaningless) or not. To make this check without disturbing the condition code, a branching table based on register 15 can be used.*

MF=list, generate, or execute form parameters

Indicates that a list, generate, or execute form of TESTCB is to be used. Omitting this operand causes the standard form of TESTCB to be used. See Appendix F for a description of the nonstandard forms of TESTCB.

Return of Status Information

After TESTCB processing is finished and control is either passed to the ERET error routine or returned to the next sequential instruction, register 15 indicates whether or not the test was completed successfully. If the test completed successfully, register 15 is set to 0; if it completed unsuccessfully, register 15 is set to either 4, 8, or 12. If it is set to 4, register 0 is also set indicating the specific nature of the error (see Appendix D).

Control Block Fields Applicable for TESTCB

The field names shown in the first column of Figure 22 are the values that can be coded for the *field name* operand of the TESTCB macro instruction. The second column indicates the number of bytes that each field occupies. No lengths are shown for fields that can only be tested using fixed values (for example, MACRF=LOGON or CONTROL=QEC).

ACB Fields

Field Name	*Length (bytes)*	*Description*
APPLID	4	Address of application program's symbolic name
PASSWD	4	Address of password
EXLST	4	Address of exit list
ACBLEN	2	Length of ACB, in bytes
ERROR	1	OPEN and CLOSE completion codes
OFLAGS	-	ACB open-closed indicator (OFLAGS=OPEN)
MACRF	-	Logon request status (MACRF=LOGON|NLOGON)

EXLST Fields

Field Name	*Length (bytes)*	*Description*
LERAD	4	Address of exit routine
SYNAD	4	
DFASY	4	
RESP	4	
SCIP	4	
TPEND	4	
RELREQ	4	
LOGON	4	
LOSTERM	4	
ATTN	4	
NSEXIT	4	
EXLLEN	2	Length of exit list, in bytes

RPL Fields

Field Name	*Length (bytes)*	*Description*
ACB	4	Address of ACB
NIB	4	Address of NIB
ARG	4	CID of session
AREA	4	Address of I/O work area
AREALEN	4	Length of AREA work area, in bytes
RECLEN	4	Length of data in AREA work area, in bytes
AAREA	4	Address of alternate I/O work area
AAREALN	4	Length of AAREA work area, in bytes
ARECLEN	4	Length of data in AAREA work area, in bytes
ECB	4	ECB or address of ECB
EXIT	4	Address of RPL exit-routine
RTNCD	1	General return code
FDBK2	1	Specific error return code
FDBK	1	Additional status information
DATAFLG	-	Alias for FDBK
IO	-	RPL internal ECB post bit on (IO=COMPLETE)
USER	4	USERFLD data
REQ	1	Request type code
RPLLEN	2	Length of RPL, in bytes
SENSE	2	Device sense and status information (BSC)
BRANCH	-	SRB indicator (BRANCH=YES|NO, OS/VS2 MVS only)
OPTCD	-	RPL option code
CRYPT	-	Enciphered data flag
SEQNO	4	Sequence number
SSENSEO	-	Outbound system sense command
SSENSMO	1	Outbound system sense modifier value
USENSEO	2	Outbound user sense value
SSENSEI	-	Inbound system sense command
SSENSMI	1	Inbound system sense modifier value
USENSEI	2	Inbound user sense value
IBSQAC	-	Inbound action code for STSN command
OBSQAC	-	Outbound action code for STSN command
IBSQVAL	4	Inbound sequence number for STSN command
OBSQVAL	4	Outbound sequence number for STSN command
POST	-	Scheduled or responded output (POST=SCHED|RESP)
RESPOND	-	Response indicator (RESPOND=EX|NEX, FME|NFME, RRN|NRRN,QRESP|NQRESP)
CONTROL	-	Control command (CONTROL=DATA|indicator)

Figure 22 (Part 1 of 2). Control Block Fields That Can Be Tested with TESTCB

RPL Fields (Cont.)

Field Name	*Length (bytes)*	*Description*
CHAIN	-	Chain indicator (CHAIN=FIRST|MIDDLE|LAST|ONLY)
CHNGDIR	-	Change-direction indicator (CHNGDIR=CMD|NCMD, REQ|NREQ)
BRACKET	-	Bracket indicator (BRACKET=BB|NBB, EB|NEB)
RTYPE	-	Receive-type indicator (DFSYN, DFASY, RESP)
STYPE	-	Send-type indicator (STYPE=REQ|RESP)
SIGDATA	4	Information included with a signal command
CODESEL	-	Type of character encoding (CODESEL=STANDARD|ALT)

NIB Fields

Field Name	*Length (bytes)*	*Description*
NAME	8	Symbolic name of terminal
USERFLD	4	Arbitrary data associated with NAME
CID	4	Communication ID
NIBLEN	1	Length of NIB, in bytes
DEVCHAR	8	Device characteristics (see Appendix H)
EXLST	4	Address of NIB-oriented exit list
RESPLIM	4	Maximum number of concurrent SEND (POST=RESP) macros
MODE	-	Mode indicator (MODE=BASIC|RECORD)
LISTEND	-	NIB list termination flag (LISTEND=YES|NO)
SDT	-	Start-data-traffic flag (SDT=APPL|SYSTEM)
PROC	-	Processing option codes
CON	-	Terminal-connected flag (CON=YES)
ENCR	-	Cryptographic level indicator (ENCR=REQD|SEL|NONE)

Figure 22 (Part 2 of 2). Control Block Fields That Can Be Tested with TESTCB

WRITE–Write a Block of Data from Program Storage to a Terminal (Basic Mode Only)

The WRITE macro instruction obtains a block of data from a designated area in application program storage and sends it to a specific non-SNA terminal.

There are several variations for WRITE:

- The write operation can be followed automatically by a read operation, as though a READ macro instruction had been coded after the WRITE macro. This composite operation is called a *conversational* write operation.
- The write operation can be preceded by the erasure of the 2265 screen of a 2770 Data Communication Terminal or a 3270 display device.
- The unprotected portion of a display screen in a 3270 display device can be erased (with no associated write operation performed).

Note: *Following connection, you cannot write to a 3735 Programmable Buffered Terminal until you first issue a SOLICIT or READ (OPTCD=SPEC) macro instruction for the terminal.*

Should a write operation be pending (or in progress) when another WRITE macro instruction is issued, the first operation is completed before the second operation is performed. This means that several WRITE macro instructions for a particular terminal can be issued serially. If data is being solicited from a terminal when the write macro instruction is issued, the write operation is suspended until the solicitation is completed. Since this may take some time, you may wish to cancel the SOLICIT request with a RESET macro instruction. Furthermore, if the terminal is a BSC device and data is being received which is not at an ETX (message) boundary, the WRITE macro instruction fails and a return code is placed in the RPL's FDBK2 field. See the SOLICIT or READ macro instruction for a description of what constitutes and controls the completion of a solicit operation.

The TRUNC-KEEP processing option in the NIB determines how excess input data is to be handled for a conversational WRITE macro instruction. When the TRUNC processing option is in effect and the CONV option code is set, and there is too much incoming data to fit in the area indicated by AAREA, the data is truncated, the remainder is lost, and the WRITE macro instruction terminates with an I/O error. With KEEP, however, the remainder is saved and passed to the program when the next READ macro instruction is issued for that terminal.

For a READ/WRITE sequence to a 3270 device, the write will not be suspended pending completion of the solicitation of that terminal.

Name	*Operation*	*Operands*
[symbol]	**WRITE**	**RPL=rpl address** **[,rpl field name=new value]...**

RPL=rpl address

Indicates the location of the RPL that governs the write operation.

rpl field name=new value

Indicates an RPL field to be modified and the new value that is to be contained or represented within it. If you wish to avoid the possibility of program reassembly following future releases of ACF/VTAM, set the RPL field with MODCB macro instructions rather than with the WRITE macro instruction.

Format: For *rpl field name,* code the keyword of the RPL macro instruction operand that corresponds to the RPL field being modified. ARG can also be coded. The *new value* can be any value that is valid for that operand in the RPL macro instruction, or it can indicate a register. The value supplied for the ARG keyword must indicate a register.

The following RPL operands apply to the WRITE macro instruction:

ACB=acb address
Indicates the ACB that was used when the terminal was connected.

ARG=(register)
The ARG field of the RPL must contain the CID of the session with the terminal to which the data is to be written (see the OPNDST macro instruction for an explanation of the CID). ARG=(register) is indicated here because register notation must be used when the CID is placed in the ARG field with this WRITE macro instruction.

AREA=output data address
The data contained at the location indicated by AREA is sent to the terminal. Since the application cannot determine the exact moment that ACF/VTAM moves the data from this area, the area should not be reused until the WRITE macro instruction is completed.

RECLEN=output data length
The number of bytes of data indicated in the RECLEN field is sent to the terminal. If this field is set to 0 and OPTCD=LBT (explained below), an EOT is sent to the terminal. If OPTCD=BLK or OPTCD=LBM, the line control characters shown in Appendix B are sent without data.

AAREA=input data area address
When the CONV option code is set, the data *obtained from* the terminal following the output operation is placed in the storage area indicated by the AAREA field. ACF/VTAM also places the length of this data in the ARECLEN field. The AAREA field is not used if NCONV is set.

AAREALN=input data area length
AAREALN indicates the capacity of the data area pointed to by AAREA. If the amount of incoming data exceeds the capacity of this data area, the action indicated by the TRUNC-KEEP option code is taken.

ECB=ecb address
ECB=INTERNAL
EXIT=rpl exit routine address
Indicates the action to be taken by ACF/VTAM when an asynchronous (OPTCD=ASY) WRITE macro instruction is completed. The macro instruction is completed after the data has been received and acknowledged by the terminal (or, for a conversational WRITE, as soon as the input data has been moved into the application program's storage area). If EXIT is specified, the RPL exit routine is scheduled. Otherwise the ECB is posted, and CHECK or WAIT must be used to determine when the posting occurs.

If ECB=INTERNAL is specified and *synchronous* handling (SYN option) is used, ACF/VTAM uses the ECB-EXIT field in the RPL as an *internal* ECB and clears it. If *asynchronous* handling (ASY option) is used, ACF/VTAM will also use the ECB-EXIT field in the RPL as an internal ECB, but the user must issue a CHECK macro instruction to check and clear it. If neither the ECB nor EXIT keywords are specified, ACF/VTAM treats the field as if ECB=INTERNAL had been specified. See the RPL macro instruction for more information.

OPTCD=SYN | ASY
When the SYN option code is set, control is returned to the application program when the WRITE macro instruction has been completed. When ASY is set, control is returned as soon as ACF/VTAM has accepted the request. Once the WRITE macro instruction has been completed, the ECB is posted or the RPL exit routine is scheduled, as indicated by the setting of the ECB-EXIT field.

OPTCD=BLK | LBM | LBT
These option codes determine whether the line-control characters selected by the system for transmission with the data should mark the data as the end of a block, the end of a message, or the end of a transmission.

When the BLK option code is set, the line-control characters indicated in Appendix B under "BLK" are sent with the block of data. BLK is invalid for a 3270 terminal.

When the LBM option code is set, the line-control characters indicated in Appendix B under "LBM" are sent with the block of data.

When the LBT option code is set, the line-control characters indicated in Appendix B under "LBT" are sent with the block of data. After the block of data is acknowledged by the terminal an EOT character is sent. A sequence of consecutive write operations will not complete until the EOT character is sent. A WRITE macro instruction with OPTCD= LBM or LBT is needed to send an EOT to the terminal and release the line.

OPTCD=CONV | NCONV
When NCONV is set, no read operation follows the write operation. When the CONV option code is in effect, an input operation is performed after the block of data has been written to the terminal. The data received in response to the write operation is placed in the area indicated by the RPL's AAREA field, and the length of that data is set in the ARECLEN field.

Should the terminal merely respond with an acknowledgement and not data, the following action is taken: An EOT is sent to the terminal and the terminal is polled (or for a point-to-point line, placed in the receive state). The input data eventually received from this polling is then placed in the AAREA and ARECLEN fields. The operation is not completed until the data is received.

When a WRITE with OPTCD=CONV is issued, a second WRITE may not be issued to the same terminal until the first output operation is completed, unless the first operation is canceled with the RESET macro instruction.

OPTCD=ERASE | EAU|NERASE
The ERASE and EAU option codes indicates that one of two special variations of WRITE are to be used; NERASE indicates that an ordinary output operation is requested.

When ERASE is used, the entire display screen of (1) a 2265 display station attached to a 2770 Data Communication System or (2) a 3270 display station, is erased before the block of data is written to the terminal. ERASE cannot be specified for conversational WRITE operations (OPTCD=CONV); use the ERASELBM or ERASELBT LDOs followed by a chained READ LDO if a combined erase-write-read operation is desired.

EAU means that the unprotected portion of a 3270 display station screen is to be erased, and its keyboard unlocked. No data is sent to the terminal. EAU cannot be specified for a conversational WRITE operation; use the EAU LDO followed by a chained READ LDO if a combined erase-read operation is desired.

OPTCD=CS|CA

When CA is set, data obtained from the terminal can satisfy a READ (OPTCD=ANY) macro instruction. When CS is set, only READ (OPTCD=SPEC) macro instructions can obtain data from the terminal. See the RPL macro instruction for more information.

Examples

```
WRITE1      WRITE      RPL=RPL1,AREA=SOURCE,RECLEN=60,
                       EXIT=WRTDONE,OPTCD=ASY
```

WRITE1 sends a 60-byte block of data from SOURCE to the terminal. This example assumes that the CID for the session with the terminal is already in RPL1's ARG field. Control is returned to the instruction following WRITE1 as soon as the data has been written to the terminal and an acknowledgment has been received. When the operation is completed, the program is interrupted and control passed to WRTDONE.

```
            MODCB      RPL=RPL2,ARG=(3)
WRITE2      WRITE      RPL=RPL2
```

WRITE2 erases the unprotected part of a 3270 display screen. The MODCB macro instruction places the contents of register 3 (the session CID) into RPL2's ARG field.

```
WRITE3      WRITE      RPL=RPL3
                       .
                       .
                       .
RPL3        RPL        AREA=OUTGOING,RECLEN=120,ARG=(3),
                       AAREA=INCOMING,AAREALN=132,
                       OPTCD=(CONV,LBT)
```

WRITE3 requests a conversational WRITE operation. 120 bytes of data from OUTGOING are sent to the terminal whose session CID is in register 3. Data is then read from the terminal and placed into INCOMING. If more than 132 bytes are received, the excess will be lost. Because the LBT option code is set, the operation is not completed until the terminal responds with data.

Return of Status Information

After a WRITE macro instruction has been completed, these RPL fields are set:

If the CONV option is set, the ARECLEN field indicates the number of bytes of data obtained during the input part of the conversational operation.

When a NIB is used during connection, ACF/VTAM associates the contents of the USERFLD field with the terminal. When the WRITE macro instruction is subsequently issued for the terminal, the contents of the USERFLD field is placed in the USER field of the RPL by ACF/VTAM.

The value 17 (decimal) is set in the REQ field indicating a WRITE request.

If the CONV option code is set, the FDBK field is set: it contains information concerning the input portion of the operation. See the FDBK field description in Appendix C.

The SENSE, RTNCD, and FDBK2 fields are set as indicated in Appendix C.

Registers 0 and 15 are also set as indicated in Appendix C.

Appendix A. Summary of Control Block Field Usage

After you have become familiar with the workings of the ACF/VTAM macro instructions described in this book, this appendix can be used as a quick reference. It shows the following information about all of the executable macro instructions in this book:

- The control block fields that are set by the application program when (or before) the macro instruction is issued.
- The control block fields and registers that are set by ACF/VTAM during macro instruction processing.

Note: *All of the control block fields that apply to the macro instruction are shown, but remember that not all fields apply to every possible variation of a macro instruction. Refer to the macro instruction descriptions if you are in doubt.*

Throughout this appendix, a pointer (→) indicates that a field contains the *address* of the given item, and an equal-sign indicates that a field contains the item itself. You will also note that a horizontal dashed line is used with each macro instruction; all information *above* this line concerns information your application program supplies to the macro instruction, and all information shown *below* this line concerns information that the macro instruction passes back to your application program.

CHANGE → RPL: ACB field → ACB to which terminal is connected

NIB field → modified NIB:

CID field = CID of session

USERFLD field = new data to be returned during subsequent I/O requests

MODE field = BASIC

PROC field = new set of processing options

{ ECB field → fullword work area
ECB field = internal ECB
EXIT field → RPL exit-routine }

OPTCD field = (SYN | ASY,CA | CS)

- -

Registers 0 and 15 = return codes

RPL: RTNCD field = recovery action return code

FDBK2 field = specific error return code

REQ field = request code

CHECK → RPL being checked

- -

RPL set inactive

ECB cleared

Registers 0 and 15 = request code

CLOSE → ACB being closed

- -

Register 15 = return code

ACB: OFLAGS field = opened or not-opened indicator

ERROR field = specific error return code

```
CLSDST     → RPL:  ACB field → ACB
                   ( NIB field → NIB:  NAME field = symbolic name of terminal or    )
                   {                   logical unit to be disconnected              }
                   { LOGMODE = logon mode name                                      }
                   ( ARG field = CID of session to be disconnected                  )
                   AAREA field→ symbolic name of receiving application program
                   AREA field → logon message
                   RECLEN field = length of logon message
                   ( ECB field → fullword work area )
                   { ECB field = internal ECB       }
                   ( EXIT field → RPL exit-routine  )
                   OPTCD field = (PASS|RELEASE,SYN|ASY)
             - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
             Registers 0 and 15 = return codes
             RPL:  RTNCD field = recovery action return code
                   FDBK2 field = specific error return code
                   REQ field = request code
```

```
DO         → RPL:  ACB field → ACB
                   ARG field = CID of session
                   ( ECB field → fullword work area )
                   { ECB field = internal ECB       }
                   ( EXIT field → RPL exit-routine  )
                   OPTCD field = (SYN|ASY,CS|CA)
                   AREA field → LDO
                         If CMD field = COPYLBM or COPYLBT,
                            ADDR → copy control character and sending device's CID
                                   (ARG field contains receiving device's CID)
                            LEN = 3
                         If CMD field = READ or READBUF,
                            ADDR → input data area
                            LEN = length of data area
                         If CMD field = ERASELBM or ERASELBT,
                            ADDR → output data
                            LEN = length of data
                         If CMD field = WRITE, WRITELBM, WRITELBT, WRTHDR,
                                        WRTNRLG, or WRTPRLG,
                            ADDR → output data
                            LEN = length of output data
             - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
             Registers 0 and 15 = return codes
             RPL:  AAREA field → last LDO used
                   USER field → data from USERFLD field of NIB
                   RECLEN field = length of data received
                   FDBK field = status information (if CMD field = READ)
                   RTNCD field = recovery action return code
                   FDBK2 field = specific error return code
                   REQ field = request code
```

```
EXECRPL    → RPL:  All fields appropriate for the request type (indicated in the REQ field)
                   are valid.
```

```
GENCB        AM = VTAM
             BLK operand = control block type
             control block field name operand = value to be set in field
```

```
                  COPIES operand = number of copies desired
                  WAREA operand → work area where blocks will be built
                  LENGTH operand = length of work area
                  MF operand = list, generate, or execute form parameters
                  - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
                  {Register 0 = error return code (if register 15 indicates unsuccessful completion)  }
                  {Register 0 = length of generated control blocks (if built in dynamically allocated }
                  {             storage obtained by ACF/VTAM and register 15 indicates successful    }
                  {             completion)                                                           }
                  Register 1 → generated control blocks (if built in dynamically allocated storage
                               obtained by ACF/VTAM and register 15 indicates successful completion)
                  Register 15 = general return code
─────────────────────────────────────────────────────────────────────────────────────
INQUIRE     → RPL:  ACB field → ACB
                    {ECB field → fullword work area}
                    {ECB field = internal ECB      }
                    {EXIT field → RPL exit-routine }
                    OPTCD = (LOGONMSG|DEVCHAR|COUNTS|TERMS|BSCID|
                             APPSTAT|CIDXLATE|TOPLOGON|SESSPARM|SESSKEY,SYN|ASY)
                    If OPTCD = LOGONMSG,
                          NIB field → NIB:  NAME field = symbolic name of terminal or logical unit
                          AREA field → input area for logon message
                          AREALEN field = length of input area
                    If OPTCD = DEVCHAR,
                          {NIB field → NIB:  NAME field = symbolic name of terminal or logical unit}
                          {ARG field = CID of session                                                }
                          AREA field → input area for characteristics
                          AREALEN field = 8
                    If OPTCD = TERMS,
                          NIB field → NIB:  NAME field = symbolic name of terminal or logical
                                            unit or group of terminals as defined by the PU, LU,
                                            TERMINAL, LINE, or CLUSTER definition
                                            macro
                          AREA field → work area where NIBs will be built
                          AREALEN field = length of work area
                    If OPTCD = COUNTS,
                          AREA field → input area for data
                          AREALEN field = 4
                    If OPTCD = APPSTAT,
                          NIB field → NIB:  NAME field = symbolic name of application
                                            program
                    If OPTCD = CIDXLATE,
                          {NIB field → NIB:  NAME field = symbolic name of terminal or logical unit}
                          {ARG field = CID to be translated                                          }
                          AREA field → input area for symbolic name
                          AREALEN field = 8
                    If OPTCD = TOPLOGON,
                          AREA field → input area for symbolic name
                          AREALEN field = 8
                    If OPTCD = BSCID,
                          NIB field → NIB:  NAME field = symbolic name of UTERM terminal
                          AREA field → work area for ID verification sequence
                          AREALEN field = 20
                    If OPTCD = SESSPARM,
                          NIB field → NIB:  NAME field = symbolic name of terminal or logical unit
                                            LOGMODE field = 0|C'    '|logon mode
```

AREA field → input area for session parameters and logon message
AREALEN field = length of input area
If OPTCD = SESSKEY,
ARG field = CID of session
AREA field → input area for cryptographic session key and ICV
AREALEN field = 16

- -

Registers 0 and 15 = return codes
RPL: RECLEN field = length of data received (if RTNCD = 0 and FDBK2 = 5, RECLEN = total required length)
FDBK field = status information (if OPTCD = APPSTAT)
RTNCD field = recovery action return code
FDBK2 field = specific error return code
REQ field = request code

INTRPRET → RPL: ACB field → ACB
{ NIB field → NIB: NAME field = symbolic name of terminal or logical unit
ARG field = CID of session }
AREA field → data to be interpreted
RECLEN field = length of data to be interpreted
AAREA field → work area for interpreted data
AAREALN field = 8
{ ECB field → fullword work area
ECB field = internal ECB
EXIT field → RPL exit-routine }
OPTCD field = SYN|ASY

- -

Registers 0 and 15 = return codes
RPL: ARECLEN field = length of data received (if RTNCD = 0 and FDBK2 = 5, ARECLEN = total required length)
RTNCD field = recovery action return code
FDBK2 field = specific error return code
REQ field = request code

MODCB AM = VTAM
control block type operand → control block
control block field name operand = new value to be set
MF operand = list, generate, or execute form parameters

- -

Register 0 = error return code (if register 15 indicates unsuccessful completion)
Register 15 = general return code

OPEN → ACB being opened

- -

Register 15 = return code
ACB: OFLAGS field = opened or not-opened indicator
ERROR field = specific error status information

OPNDST → RPL: ACB field → opened ACB to which terminal or logical unit to be connected
{ ECB field → fullword work area
ECB field = internal ECB
EXIT field → RPL exit-routine }
OPTCD field = (SPEC|ANY,SYN|ASY,CS|CA,Q|NQ,CONANY|CONALL,ACQUIRE|ACCEPT)
NIB field → NIB|NIB list:

```
                                PROC field = processing options
                                MODE field = BASIC or RECORD
                                USERFLD field = data to be returned during subsequent
                                                I/O requests
                                EXLST field → exit routine list
                                ENCR field = level of cryptography  desired (REQD|SEL|NONE)
                                RESPLIM field = pending responded-output limit
                                SDT field = sender of SDT commands
                               {LOGMODE = 0|logon mode|C' '                              }
                               {BNDAREA → bind area containing session parameters|0      }
                         If OPTCD = ACQUIRE,
                               NAME field = symbolic name of terminal or logical unit
                               LISTEND field = YES or NO
                         If OPTCD = ACCEPT and ANY,
                               NAME field not examined
                               LISTEND field = YES
                         If OPTCD = ACCEPT and SPEC,
                               NAME field = symbolic name of terminal or logical unit
                               LISTEND field = YES
                  - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
                  Registers 0 and 15 = return codes
                  RPL:   ARG field = CID of session with the connected terminal or logical unit (but if
                                     CONALL in effect and more than one connected, unpredictable)
                         RTNCD field = recovery action return code
                         FDBK2 field = specific error return code
                         REQ field = request code
                         AREA field → NIB:
                               CID field = CID of session with the connected terminal or logical unit
                               CON field = YES (if terminal or logical unit connected)
                               NAME field = symbolic name of connected terminal or logical unit
                                            (when ACCEPT and ANY in effect)
                               DEVCHAR field = device characteristics
                               NIBNACLQ = status of pending logon
______________________________________________________________________________________________

OPNSEC       → RPL:      ACB field → ACB
                         NIB field → NIB:
                               NAME field → symbolic name of primary application program
                               MODE field = RECORD
                               USERFLD field = data to be used during subsequent I/O requests
                               EXLST field = exit routines
                               ENCR field = level of cryptography desired (REQD|SEL|NONE)
                               RESPLIM field = limit for outstanding SEND macros with POST = RESP
                               LISTEND = YES
                               SDT = responder to SDT commands
                               PROC field = processing options
                         {ECB field → fullword work area }
                         {ECB field → internal ECB       }
                         {EXIT field → RPL exit routine  }
                         OPTCD field = SYN|ASY,CA|CS)
                  - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
                  Registers 0 and 15 = return codes
                  RPL:   ARG field = CID of the session with the application program
                         RTNCD field = recovery action return code
                         FDBK2 field = specific error return code
                         AREA field → NIB
                         REQ field = request code
______________________________________________________________________________________________
```

```
RCVCMD    → RPL:  ACB field → ACB
                  AREA field → input area for header and message
                  AREALEN field = length of input area
                  ⎧ ECB field → fullword work area ⎫
                  ⎨ ECB field = internal ECB       ⎬
                  ⎩ EXIT field → RPL exit-routine  ⎭
                  OPTCD field = (SYN|ASY,TRUNC, Q|NQ)
            - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
            Registers 0 and 15 = return codes
            RPL:  RECLEN field = length of input data received
                  REQ field = request code
                  RTNCD field = recovery action return code
                  FDBK2 field = specific error return code
                  AAREAL◄–N field = maximum length of reply allowed (if requested)
```

```
READ      → RPL:  ACB field → ACB
                  ARG field = CID of session with the source terminal
                  AREA field → input data area
                  AREALEN field = length of input data area
                  ⎧ ECB field → fullword work area ⎫
                  ⎨ ECB field = internal ECB       ⎬
                  ⎩ EXIT field → RPL exit-routine  ⎭
                  OPTCD field = (SPEC|ANY,SYN|ASY,CS|CA)
            - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
            Registers 0 and 15 = return codes
            RPL:  ARG field = CID of session with the source terminal (if OPTCD = ANY)
                  RECLEN field = length of input data
                  USER field = data from USERFLD field in NIB
                  FDBK field = status information
                  RTNCD field = recovery action return code
                  FDBK2 field = specific error return code
                  REQ field = request code
```

```
RECEIVE   → RPL:  ACB field → ACB to which logical unit connected
                  ARG field = CID of session with the logical unit
                  AREA field → input data area
                  AREALEN field = length of input data area
                  BRANCH field = YES or NO
                  ⎧ ECB field → fullword work area ⎫
                  ⎨ ECB field = internal ECB       ⎬
                  ⎩ EXIT field → RPL exit-routine  ⎭
                  OPTCD field = (SYN|ASY, CA|CS, SPEC|ANY, TRUNC|KEEP|
                                NIBTK, Q|NQ)
                  RTYPE field = (DFSYN|NDFSYN, DFASY|NDFASY, RESP|NRESP)
            - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
```

```
                Registers 0 and 15 = return codes
                RPL:  ARG field = CID of session with the logical unit completing the RECEIVE
                      RTYPE field = type of input received
                      RECLEN field = length of input data
                      SEQNO field = sequence number of input
                      RESPOND field = (EX|NEX, FME|NFME, RRN|NNRN,QRESP|NQRESP)
                      USER field = data from USERFLD field of NIB
                      REQ field = request code
                      CRYPT = YES|NO
                      RTNCD field = recovery action return code
                      FDBK2 field = specific error return code
                      CHNGDIR field = REQ|NREQ (if RTYPE = DFASY or RESP)
                                      CMD|NCMD (if RTYPE = DFSYN)
                      CODESEL field = STANDARD|ALT
                      BRACKET field = (BB|NBB, EB|NEB)
                      CHAIN field = FIRST|MIDDLE|LAST|ONLY
                      SIGDATA field = signal value (if CONTROL = SIGNAL)
                      CONTROL field = DATA|QEC|RELQ|QC|CANCEL|CHASE|SHUTD|
                                      LUS|SIGNAL|RTR|RSHUTD|SHUTC|BID|SBI|BIS
                      OPTCD = FMHDR
                      SSENSEI field = CPM|STATE|FI|RR|PATH|0
                      SSENSMI field = system sense modifier value (or 0)
                      USENSEI field = user sense value (or 0)
--------------------------------------------------------------------------------------
REQSESS  →      RPL:  ACB field → ACB
                      NIB field → NIB:
                            NAME field = symbolic name of primary application program
                            LOGMODE field = logon mode name
                            LISTEND = YES
                      { ECB field → fullword work area }
                      { ECB field → internal ECB       }
                      { EXIT field → RPL exit routine  }
                      AREA field → user data
                      RECLEN = user data length
                      AAREA = 0
                      OPTCD = (SYN|ASY,NQ)
                - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
                Registers 0 and 15 = return codes
                RPL:  RTNCD field = recovery action return code
                      FDBK2 field = specific error return code
                      REQ field = request code
                      SSENSEI field = CPM|STATE|FI|RR|PATH|0
                      SSENSMI field = system sense modifier value (or 0)
                      USENSEI field = user sense value (or 0)
--------------------------------------------------------------------------------------
```

```
RESET       → RPL:  ACB field → ACB
                    ARG field = CID of session
                   ⎧ ECB field → fullword work area ⎫
                   ⎨ ECB field = internal ECB       ⎬
                   ⎩ EXIT field → RPL exit-routine  ⎭
                    OPTCD field = (SYN| ASY, CS| CA, COND| UNCOND| LOCK)
              - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
              Registers 0 and 15 = return codes
              RPL:  USER field = data from USERFLD field in NIB
                    RTNCD field = recovery action return code
                    FDBK2 field = specific error return code
                    REQ field = request code
_____________________________________________________________________________________________
RESETSR     → RPL:  ACB field → ACB to which logical unit connected
                    ARG field = CID of session with the receiving logical unit
                   ⎧ ECB field → fullword work area ⎫
                   ⎨ ECB field = internal ECB       ⎬
                   ⎩ EXIT field → RPL exit-routine  ⎭
                    BRANCH field = YES or NO
                    RTYPE field = (DFSYN| NDFSYN, DFASY| NDFASY, RESP| NRESP)
                    OPTCD field = (SYN| ASY, CA| CS)
              - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
              Registers 0 and 15 = return codes
              RPL:  USER field = data from USERFLD field in NIB
                    RTNCD field = recovery action return code
                    FDBK2 field = specific error return code
                    REQ field = request code
```

```
SEND     → RPL:  ACB field → ACB to which logical unit connected
                 ARG field = CID of session with the receiving logical unit
                 AREA field → data to be sent
                 RECLEN field = length of data to be sent
                 CHNGDIR field = REQ|NREQ (if RTYPE = DFASY or RESP)
                                 CMD|NCMD (if RTYPE = DFSYN)
                 BRANCH field = YES or NO
                 ⎧ECB field → fullword work area⎫
                 ⎨ECB field = internal ECB      ⎬
                 ⎩EXIT field → RPL exit-routine ⎭
                 RESPOND field = (EX|NEX, FME|NFME, RRN|NRRN,QRESP|NQRESP)
                 RTYPE field = (DFSYN|NDFSYN, DFASY|NDFASY, RESP|NRESP)
                 CONTROL field = DATA|QEC|RELQ|QC|CANCEL|CHASE|SHUTD|
                                 BID|LUS|SIGNAL|SBI|BIS|RTR|SHUTC|RSHUTD
                 BRACKET field = (BB|NBB, EB|NEB)
                 CRYPT = YES|NO
                 SIGDATA field = signal data
                 CODESEL field = STANDARD|ALT
                 STYPE field = REQ or RESP
                 If STYPE = RESP,
                         SEQNO field = sequence number
                 If STYPE = RESP and RESPOND = EX,
                         SSENSEO field = 0|CPM|STAT|FI|RR
                         SSENSMO field = system sense modifier value
                         USENSEO field = user sense value
                 If STYPE = REQ and CONTROL = DATA,
                         CHAIN field = FIRST|MIDDLE|LAST|ONLY
                         POST field = SCHED|RESP (SCHED assumed if definite response
                                      not requested)
                 OPTCD field = (SYN|ASY, FMHDR|NFMHDR, CS|CA)
         - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
         Registers 0 and 15 = return code
         RPL:    USER field = data from USERFLD field of NIB
                 RTNCD field = recovery action return code
                 FDBK2 field = specific error return code
                 REQ field = request code
                 SEQNO field = sequence number
                 RESPOND = unpredictable
                 If POST = RESP and STYPE = REQ,
                         CHNGDIR field = (REQ|NREQ, CMD|NCMD)
                         RESPOND field = (EX|NEX, FME|NFME, RRN|NRRN)
                         SSENSEI field = CPM|STATE|FI|RR|PATH|0
                         SSENSMI field = system sense modifier value (or 0)
                         USENSEI field ≐ user sense value (or 0)
```

```
SENDCMD      → RPL:  ACB field → ACB
                     AREA field → header and command to be sent
                     RECLEN field = length of header and command to be sent
                     ⎧ ECB field → fullword work area ⎫
                     ⎨ ECB field = internal ECB       ⎬
                     ⎩ EXIT field → RPL exit-routine  ⎭
                     OPTCD field = SYN|ASY
             ---------------------------------------------------------
             Registers 0 and 15 = return codes
             RPL:    REQ field = request code
                     RTNCD field = recovery action return code
                     FDBK2 field = specific error return code
________________________________________________________________________
SESSIONC     → RPL:  ACB field → ACB to which logical unit connected
                     ARG field = CID of session with the logical unit
                     ⎧ ECB field → fullword work area ⎫
                     ⎨ ECB field = internal ECB       ⎬
                     ⎩ EXIT field → RPL exit-routine  ⎭
                     OPTCD field = SYN|ASY
                     STYPE field = REQ|RESP
                     CONTROL field = SDT|CLEAR|STSN|BIND|RQR
                     If CONTROL = STSN,
                           IBSQVAL field = inbound sequence number
                           IBSQAC field = SET|TESTSET|INVALID|IGNORE
                           OBSQVAL field = outbound sequence number
                           OBSQAC field = SET|TESTSET|INVALID|IGNORE
             ---------------------------------------------------------
             Registers 0 and 15 = return codes
             RPL:    USER field = data from USERFLD field of NIB
                     RTNCD field = recovery action return code
                     FDBK2 field = specific error return code
                     REQ field = request code
                     SSENSEI field = CPM|STATE|FI|RR|PATH|0
                     SSENSMI field = system sense modifier value (or 0)
                     USENSEI field = user sense value (or 0)
                     If CONTROL = STSN,
                           IBSQVAL field = inbound sequence number
                           IBSQAC field = TESTPOS|TESTNEG|RESET|INVALID
                           OBSQVAL field = outbound sequence number
                           OBSQAC field = TESTPOS|TESTNEG|RESET|INVALID
________________________________________________________________________
SETLOGON     → RPL:  ACB field → ACB whose logon queuing status is to be changed
                     ⎧ ECB field → fullword work area ⎫
                     ⎨ ECB field = internal ECB       ⎬
                     ⎩ EXIT field → RPL exit-routine  ⎭
                     OPTCD field = (SYN|ASY, START|STOP|QUIESCE)
             ---------------------------------------------------------
             Registers 0 and 15 = return codes
             RPL:    RECLEN field = number of queued logon requests
                                  (if OPTCD = QUIESCE)
                     REQ field = request code
                     RTNCD field = recovery action return code
                     FDBK2 field = specific error return code
```

SHOWCB
AM = VTAM
control block type operand → control block
FIELDS = control block field to be extracted
AREA → work area where contents of blocks will be placed
LENGTH operand = length of the work area
MF operand = list, generate, or execute form parameters

- -

Register 0 = error return code (if register 15 indicates unsuccessful completion)
Register 0 = length of the control block field extracted (if register 15 indicates successful completion)
Register 15 = general return code

SIMLOGON → RPL: ACB field → ACB
NIB field → NIB:
NAME field = symbolic name of terminal or logical unit
LISTEND field = YES or NO
LOGMODE = logon mode name
AREA field → logon message
RECLEN field = length of logon message
{ ECB field → fullword work area
ECB field = internal ECB
EXIT field → RPL exit-routine }
OPTCD field = (SYN|ASY,Q|NQ,CONANY|CONALL, RELRQ|NRELRQ)

- -

Registers 0 and 15 = return codes
RPL: RTNCD field = recovery action return code
FDBK2 field = specific error return code
REQ field = request code

SOLICIT → RPL: ACB field → ACB
ARG field = CID of session with the source terminal (if OPTCD = SPEC)
{ ECB field → fullword work area
ECB field = internal ECB
EXIT field → RPL exit-routine }
OPTCD field = (SPEC|ANY,SYN|ASY,CS|CA)

- -

Registers 0 and 15 = return codes
RPL: USER field = data from USERFLD field of NIB
RTNCD field = recovery action return code
FDBK2 field = specific error return code
REQ field = request code

TERMSESS → RPL: ACB field → ACB
NIB field → NIB:
ARG field = CID of the session to be terminated
NAME field = symbolic name of primary application program
LISTEND = YES
{ ECB field → fullword work area
ECB field → internal ECB
EXIT field → RPL exit routine }
OPTCD = (SYN|ASY,COND|UNCOND)

- -

	Registers 0 and 15 = return codes RPL: RTNCD field = recovery action return code FDBK2 field = specific error return code REQ field = request code SSENSEI field = CPM|STATE|FI|RR|PATH|0 SSENSMI field = system sense modifier value (or 0) USENSEI field = user sense value (or 0)
TESTCB	AM = VTAM control block type operand → control block field name operand = test value ERET operand → error exit-routine MF operand = list, generate, or execute form parameters - Register 0 = error return code (if register 15 indicates unsuccessful completion) Register 15 = general return code PSW condition code = test result
WRITE	→ RPL: ACB field → ACB ARG field = CID of receiving terminal AREA field → data to be written RECLEN field = length of data to be written AAREA field → input data area AAREALN field = length of input data area { ECB field → fullword work area ECB field = internal ECB EXIT field → RPL exit-routine } OPTCD field = (SYN|ASY, CS|CA, BLK|LBM|LBT, CONV|NCONV, ERASE|EAU|NERASE) - Registers 0 and 15 = return codes RPL: ARECLEN field = length of input data USER field = data form USERFLD field of NIB FDBK field = status information RTNCD field = recovery action return code FDBK2 field = specific error return code REQ field = request code

Appendix B. Communication-Control Character Recognized or Sent

This appendix is only for programmers who are concerned with communication between the application program and BSC or start-stop terminals. Communication with logical units does not involve communication-control characters.

ACF/VTAM relieves the application program of the task of inserting line-control characters into outgoing data and removing them from incoming data. The application program, however, is not completely communication-control independent. For an output operation, the BLK-LBM-LBT option for the WRITE macro instruction governs which communication-control characters are inserted in the data. For a solicit operation, the BLOCK-MSG-TRANS-CONT option identifies the communication-control character that causes solicitation to stop when that character is received. The application programmer must be aware of the effect of these options.

The first three columns in Figures B-1 and B-2 show the communication-control characters that delimit the data obtained by a solicit operation. The first column shows the delimiting character when the NIB's BLOCK-MSG-TRANS-CONT processing option is set to BLOCK, the second column shows the delimiting character when the processing option is set to MSG, and the third shows the delimiting character when TRANS is in effect. (There are no delimiting characters for CONT, because solicitation continues indefinitely.)

The last three columns show the communication-control characters added to the beginning and end of the user-supplied data when a WRITE macro instruction is issued. The first of these three columns shows the beginning and ending characters that are inserted when the RPL's option code is set to BLK, or if a WRITE LDO is being used by DO. The next shows the characters inserted when the LBM option code is in effect or a WRITELBM LDO is used. The last column applies to the LBT option code or WRITELBT LDO.

	Soliciting			Writing		
	Specified as PROC =			(b) = inserted at the beginning (e) = inserted at end		
				Specified as OPTCD =		
Start–Stop Devices	BLOCK	MSG	TRANS	BLK	LBM	LBT

IBM 1050 Data Communication System	EOB	EOT	EOT	EOA(b)
				EOB(e)
					EOA(b)
					EOB(e)[1]
						EOA(b)
						EOB(e)[1]

IBM 2740 Communication Terminal, Model 1	EOT	EOT	EOT	EOA(b)
				NUL(e)
					EOA(b)
					NUL(e)
						EOA(b)
						NUL(e)

IBM 2740 Communication Terminal, Model 1, with checking	EOB	EOT	EOT	EOA(b)
				EOB(e)
					EOA(b)
					EOB(e)[1]
						EOA(b)
						EOB(e)[1]

IBM 2740 Communication Terminal, Model 1, with checking and station control	EOB	EOT	EOT	EOA(b)
				EOB(e)
					EOA(b)
					EOT(e)
						EOA(b)
						EOT(e)

IBM 2740 Communication Terminal, Model 2	EOT	EOT	EOT	EOA(b) EOT(e)[1]	EOA(b) EOT(e)[1]	EOA(b) EOT(e)[1]

IBM 2741 Communication Terminal	EOT	EOT	EOT	EOA(b)
				NUL(e)
					EOA(b)
					NUL(e)
						EOA(b)
						NUL(e)

IBM Communication Magnetic Card Selectric Typewriter	EOT	EOT	EOT	EOA(b)
				NUL(e)
					EOA(b)
					NUL(e)
						EOA(b)
						NUL(e)

IBM World Trade Telegraph Station	EOT	EOT	EOT	CCITT header	CCITT header	CCITT header

IBM System/7	EOT	EOT	EOT	EOA(b)
				NUL(e)
					EOA(b)
					NUL(e)
						EOA(b)
						NUL(e)

AT&T 83B3 Selective Calling Station	EOT	EOT	EOT	none(b)
				EOM(e)
					none(b)
					EOM(e)
						none(b)
						EOM(e)

AT&T Teletypewriter Terminal, Models 33 and 35	EOT	EOT	EOT	none(b)
				EOM(e)
					none(b)
					EOM(e)
						none(b)
						EOM(e)

Western Union Plan 115A Station	EOT	EOT	EOT	none(b)
				EOM(e)
					none(b)
					EOM(e)
						none(b)
						EOM(e)

[1] And an EOT is sent when the block is acknowledged by the system with a positive response.

Figure B-1. Communication Control Characters Used with Start-Stop Devices

	Soliciting			Writing		
	Specified as PROC=			(b) = inserted at the beginning (e) = inserted at end		
				Specified as OPTCD=		
Binary Synchronous Communication Devices	BLOCK	MSG	TRANS	BLK	LBM	LBT

IBM 2770 Data Communication System	ETB	ETX	EOT	STX(b)
				ETB(e)
					STX(b)
					ETX(e)
						STX(b)
						ETX(e) [1]

IBM 2780 Data Transmission Terminal	ETB	ETX	EOT	STX(b)
				ETB(e)
					STX(b)
					ETX(e)
						STX(b)
						ETX(e) [1]

IBM 2972 General Banking Terminal, Models 8 and 11	ETB	ETX	EOT	STX(b)
				ETX(e)
					STX(b)
					ETX(e)
						STX(b)
						ETX(e) [1]

IBM 3270 Information Display System, remotely attached	2	EOT	EOT	2, 3	3	STX(b) ETX(e) [3]

IBM 3735 Programmable Buffered Terminal	ETB	ETX	EOT	STX(b)
				ETB(e)
					STX(b)
					ETX(e)
						STX(b)
						ETX(e) [1]

IBM 3740 Data Entry System	ETB	ETX	EOT	STX(b)
				ETB(e)
					STX(b)
					ETX(e)
						STX(b)
						ETX(e) [1]

IBM 3780 Data Transmission Terminal	ETB	ETX	EOT	STX(b)
				ETB(e)
					STX(b)
					ETX(e)
						STX(b)
						ETX(e) [1]

IBM System/3 or IBM System/32	ETB	ETX	EOT	STX(b)
				ETB(e)
					STX(b)
					ETX(e)
						STX(b)
						ETX(e) [1]

IBM System/370	ETB	ETX	EOT	STX(b)
				ETB(e)
					STX(b)
					ETX(e)
						STX(b)
						ETX(e) [1]

[1] And an EOT is sent when the block is acknowledged by the system with a positive response.

[2] PROC=BLOCK and OPTCD=BLK are invalid for 3270 devices.

[3] No line control characters are sent.

Figure B-2. Communication Control Characters Used with BSC Devices

Appendix C. Return Codes for RPL-Based Macro Instructions

Return Code Posting

ACF/VTAM posts return code information in registers 0 and 15 and in certain fields of the request's RPL. These fields are referred to as the feedback fields. The manner in which registers 0, 15, and the feedback fields are posted depends on whether synchronous request handling, asynchronous request handling with an ECB, or asynchronous request handling with an RPL exit routine is used. Chapter 5 of *ACF/VTAM Concepts and Planning* and Chapter 3 of *ACF/VTAM Macro Language Guide* illustrate these three methods of request handling. The following three figures parallel those in the other books (although the posting of register 15 and feedback fields has been emphasized here).

In Figure C-1, the application program issues a SEND macro instruction and specifies *synchronous* request handling. Control passes from the application program and is not returned until the operation is completed. At that time, registers 0 and 15 are set by ACF/VTAM (or, if the LERAD or SYNAD exit routine is scheduled, registers 0 and 15 are set by the exit routine) to indicate how the operation is completed. Feedback fields in the RPL are also set.

In Figure C-2, the application program issues another SEND, this time specifying asynchronous request handling and an ECB. ACF/VTAM receives control, screens the request, schedules the requested operation (if the request is in order), and returns control to the application program. This is the 'initial completion' of the asynchronous request–that is, the point at which the request is accepted or rejected. If the request was unacceptable, ACF/VTAM (or the LERAD or SYNAD exit routine, if one was available to be scheduled) indicates this in registers 0 and 15. No additional return codes are posted in RPL2's feedback fields, and no CHECK macro instruction should be issued for RPL2. (The RPL is not set active if the request is not accepted, and CHECK cannot be used to check an inactive RPL.)

The application program will find a return code of 0 in register 15 if the request was accepted. Since an ECB was specified for the request, the application program must eventually issue a CHECK macro instruction for RPL2. (A system WAIT macro instruction could be used instead, although CHECK would still be required eventually to set the RPL inactive.) When the SEND operation is eventually completed, the ECB is posted and control is again returned to the application program. This time registers 0 and 15 and RPL2's feedback fields are set by ACF/VTAM (or by the LERAD or SYNAD exit-routine, if one was invoked as the result of issuing the CHECK macro instruction) to indicate how the SEND operation was completed.

In Figure C-3, the application program again issues an asynchronous SEND request, but this time with an RPL exit routine specified instead of an ECB. As before, a zero or non zero return code is returned to the application program at initial completion, indicating that the request has been accepted or rejected. The final completion of the SEND operation results in the invocation of the RPL exit routine if the request was accepted. After CHECK has been issued, EXITRTN finds that registers 0 and 15 and the feedback fields of RPL3 have been posted.

Types of Return Codes

ACF/VTAM always sets register 15 to 0 if a request has been accepted or has been completed normally. Register 0 is also sometimes set for normal completion, as noted below.

When a request is not accepted (Figure C-4) or is completed abnormally (Figure C-5), ACF/VTAM schedules the LERAD or SYNAD exit routine. (Figures C-4 and C-5 indicate

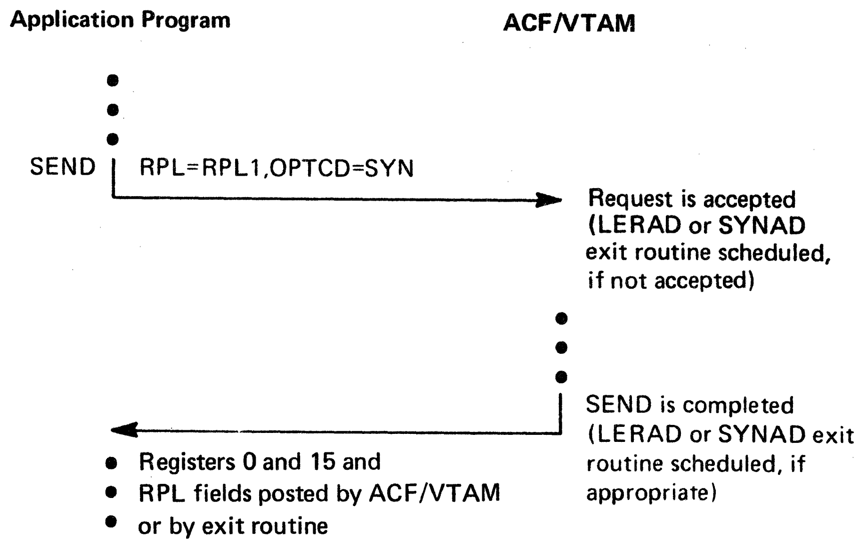

Application Program
ACF/VTAM
SEND
RPL=RPL1,OPTCD=SYN
Request is accepted (LERAD or SYNAD exit routine scheduled, if not accepted)
SEND is completed (LERAD or SYNAD exit routine scheduled, if appropriate)
Registers 0 and 15 and
RPL fields posted by ACF/VTAM
or by exit routine

Figure C-1. Posting Return Codes for Synchronous Requests

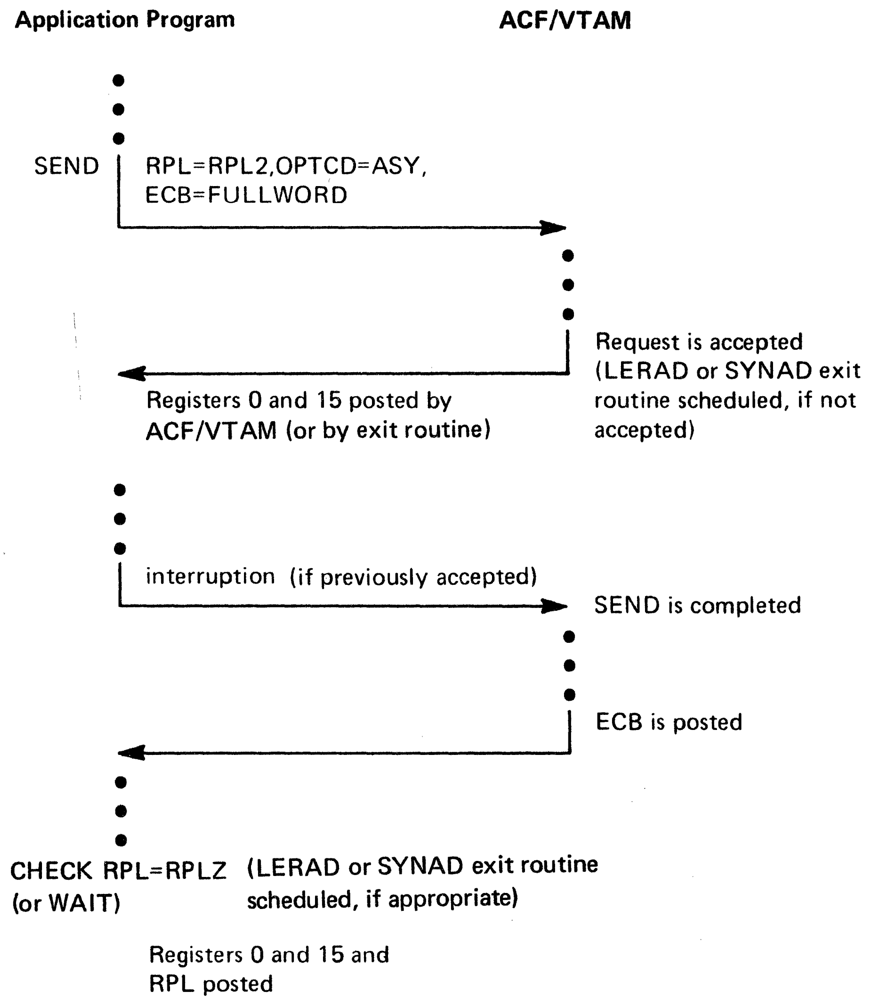

Application Program
ACF/VTAM
SEND
RPL=RPL2,OPTCD=ASY,
ECB=FULLWORD
Request is accepted (LERAD or SYNAD exit routine scheduled, if not accepted)
Registers 0 and 15 posted by ACF/VTAM (or by exit routine)
interruption (if previously accepted)
SEND is completed
ECB is posted
CHECK RPL=RPLZ
(or WAIT)
(LERAD or SYNAD exit routine scheduled, if appropriate)
Registers 0 and 15 and RPL posted

Figure C-2. Posting Return Codes for Asynchronous Requests (with CHECK)

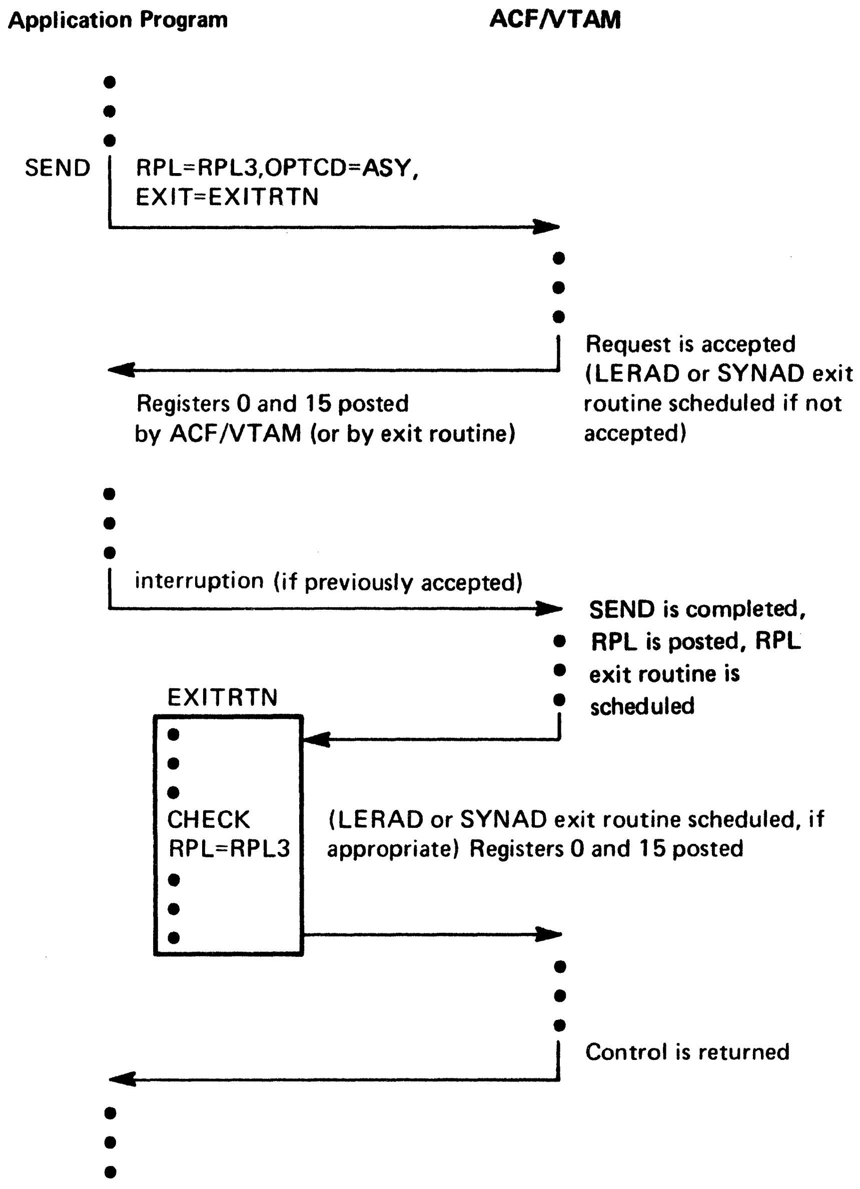

Application Program
ACF/VTAM
SEND
RPL=RPL3,OPTCD=ASY,
EXIT=EXITRTN
Request is accepted (LERAD or SYNAD exit routine scheduled if not accepted)
Registers 0 and 15 posted by ACF/VTAM (or by exit routine)
interruption (if previously accepted)
SEND is completed, RPL is posted, RPL exit routine is scheduled
EXITRTN
CHECK
RPL=RPL3
(LERAD or SYNAD exit routine scheduled, if appropriate) Registers 0 and 15 posted
Control is returned

Figure C-3. Posting Return Codes for Asynchronous Requests (with an RPL Exit Routine)

Figure C-4. Completion Conditions Applicable for Initial Completion of Asynchronous Requests

Completion Condition	Explanation	Example	Registers at NSI when SYNAD-LERAD not available		Registers at entry when SYNAD-LERAD are available		Registers at NSI when SYNAD-LERAD are available		RPL feedback fields set	Applicable macros	Recommended Programmer Action (in LERAD, SYNAD, or after next sequential instruction)
Request accepted (General return code = 0, Recovery action return code = 0)	ACF/VTAM has accepted the asynchronous request and will process it. Completion information will again be available when the request is completed.	———	*Reg 15* 0	*Reg 0* 0	*Reg 15* 0 (LERAD-SYNAD not entered)	*Reg 0* 0	*Reg 15* 0 (LERAD-SYNAD not entered)	*Reg 0* 0	RTNCD=0, FDBK2=0	All RPL-based macros	———
Request not accepted (General return code = 4), Retry appropriate (Recovery action return code = 8)	ACF/VTAM has rejected the asynchronous request because of a temporary condition.	A temporary storage shortage has occurred.	*Reg 15* 4	*Reg 0* 8	*Reg 15* Address of SYNAD exit-routine	*Reg 0* 8	*Reg 15* Set by SYNAD exit-routine	*Reg 0*	RTNCD=8, FDBK2=0	All RPL-based macros	Issue an EXECRPL macro to retry the request.
Environment Error (Recovery action return code = 16)	ACF/VTAM has rejected the asynchronous request because of an environmental condition beyond the control of the application program.	ACF/VTAM not active.	*Reg 15* 4	*Reg 0* 16	*Reg 15* Address of SYNAD exit-routine	*Reg 0* 16	*Reg 15* Set by SYNAD exit-routine	*Reg 0*	RTNCD=16, FDBK2= specific error return code (13 or 14)	All RPL-based macros	Request external intervention (from the network operator, for example) or suspend processing.
Logical Error (Recovery action return code = 20)	ACF/VTAM has rejected the asynchronous request because the request violates the requirements defined in this manual.	A READ has been issued for an output-only device.	*Reg 15* 4	*Reg 0* 20	*Reg 15* Address of LERAD exit-routine	*Reg 0* 20	*Reg 15* Set by LERAD exit-routine	*Reg 0*	RTNCD=20, FDBK2= specific error return code (0, 2, or 3)	All RPL-based macros	Obtain a program dump and correct the program.
Logical Error with Invalid RPL (Recovery action return code = 24)	ACF/VTAM has rejected the asynchronous request because the RPL address points to an active RPL or does not point to any RPL. **1**	An attempt was made to reuse an RPL to which no CHECK had been issued.	*Reg 15* 4	*Reg 0* 24	*Reg 15* Address of LERAD exit-routine	*Reg 0* 24	*Reg 15* Set by LERAD exit-routine	*Reg 0*	RPL not set and should not be examined.	All RPL-based macros	Obtain a program dump and correct the program.
Request not accepted because of a prior failure OPEN (General return code = 32, no Recovery action return code)	The RPL points to an ACB that has not been properly opened or that has been closed.	———	*Reg 15* 32	*Reg 0* Request code (see description of RPL's REQ field)	*Reg 15* 32 (LERAD-SYNAD not entered)	*Reg 0* Request code (see description of RPL's REQ field)	*Reg 15* 32 (LERAD-SYNAD not entered)	*Reg 0* Request code (see description of RPL's REQ field)	RPL not set.	All RPL-based macros	Obtain a program dump and correct the program.

1 Note: When using OS/VS1 or OS/VS2 SVS and attempting to perform a multitask operation, the program is not authorized by the Authorized Program Facility (APF).

Completion Condition	Explanation	Example	Registers at NSI when SYNAD-LERAD not available	Registers at entry when SYNAD-LERAD are available	Registers at NSI when SYNAD-LERAD are available	RPL feedback fields set	Applicable macros	Recommended Programmer Action (in LERAD, SYNAD, or after next sequential instruction
Normal Completion (General return code = 0)	The request has been completed successfully. For some macros (see right-most column), Register 0 contains additional information.	INQUIRE was issued to obtain a logon message, and there was none.	*Reg 15* *Reg 0* 0 Available information return code	*Reg 15* *Reg 0* 0 Additional information return code (LERAD-SYNAD not entered)	*Reg 15* *Reg 0* 0 Additional information return code (LERAD-SYNAD not entered)	RTNCD=0 FDBK2= Additional information return code	All RPL-based macros	RESET, WRITE, INQUIRE, INTRPRET, OPNDST, RECEIVE, and SIMLOGON macros can be completed normally with special conditions present. If these conditions are meaningful to the application program, check Register 0 or FDBK2. These conditions are explained after Fig. C-6.
Abnormal Completion (General return code = 4),								
Special Condition (Recovery action return code = 4)	The terminal has returned a special condition indicator for a request that would otherwise have been completed normally.	An exception message has been received.	*Reg 15* *Reg 0* 4 4	*Reg 15* *Reg 0* Address of SYNAD exit-routine 4	*Reg 15* *Reg 0* Set by SYNAD exit-routine	RTNCD=4, FDBK2= special condition indicator	OPNDST, DO, READ, WRITE, SEND, and RECEIVE	Take whatever action is appropriate for the FDBK2 indicator. These indicators are explained after Fig. C-6.
Retry Appropriate (Recovery action return code = 8)	ACF/VTAM cannot complete the request because of a temporary condition.	A temporary storage shortage has occurred.	*Reg 15* *Reg 0* 4 8	*Reg 15* *Reg 0* Address of SYNAD exit-routine 8	*Reg 15* *Reg 0* Set by SYNAD exit-routine	RTNCD=8, FDBK2= specific error return code.	All RPL-based macros	Issue an EXECRPL macro to retry the request.
Data Integrity Damaged (Recovery action return code = 12)	ACF/VTAM cannot complete the request. Either the data itself has been lost and must be resent, or the output medium (the form in a printer, for example) has been overwritten and the operation must be redone.	A hardware error occurred during an output operation.	*Reg 15* *Reg 0* 4 12	*Reg 15* *Reg 0* Address of SYNAD exit-routine 12	*Reg 15* *Reg 0* Set by SYNAD exit-routine	RTNCD=12, FDBK2= specific error return code	OPNDST, CHANGE, and all I/O macros	Take whatever action is appropriate to the FDBK2 return code. These codes are explained after Fig. C-6. In general, the process that was interrupted should be restarted

Figure C-5 (Part 1 of 2). Completion Conditions Applicable for Completion of Synchronous Requests or for CHECK (after Asynchronous Requests)

Completion Condition	Explanation	Example	Registers at NSI when SYNAD-LERAD not available	Registers at entry when SYNAD-LERAD are available	Registers at NSI when SYNAD-LERAD are avaialble	RPL feedback fields set	Applicable macros	Recommended Programmer Action (in LERAD, SYNAD, or after next sequential instruction
Abnormal Completion (General return code = 4), (Cont.)								
Environment Error (Recovery action return code = 16)	ACF/VTAM cannot complete the request. The problem cannot be resolved without external intervention.	ACF/VTAM not active.	*Reg 15* *Reg 0* 4 16	*Reg 15* *Reg 0* Address of SYNAD exit-routine 16	*Reg 15* *Reg 0* Set by SYNAD exit-routine	RTNCD=16, FDBK2= specific error return code	All RPL-based macros	Take whatever action is appropriate for the FDBK2 return code. These codes are explained after Fig. C-6. In general, the logical unit or terminal is unavailable and should either be disconnected or network operation intervention should be requested.
Logical Error (Recovery action return code = 20)	ACF/VTAM cannot complete the request because it violates the requirements defined in this manual.	An I/O request is issued for a disconnected terminal.	*Reg 15* *Reg 0* 4 20	*Reg 15* *Reg 0* Address of LERAD exit-routine 20	*Reg 15* *Reg 0* Set by LERAD exit-routine	RTNCD=20, FDBK2= specific error return code	All RPL-based macros	Obtain a program dump and correct the program.
Logical Error with invalid RPL (Recovery action return code = 24)	ACF/VTAM cannot complete the request because the RPL address points to an active RPL or does not point to any RPL.	The RPL address was destroyed before the request was executed.	*Reg 15* *Reg 0* 4 24	*Reg 15* *Reg 0* Address of LERAD exit-routine 24	*Reg 15* *Reg 0* Set by LERAD exit-routine	RPL not set and should not be examined.	All RPL-based macros	Obtain a program dump and correct the program.
Abnormal Completion because of a prior OPEN failure (General return code = 32, no Recovery action return code.	ACF/VTAM cannot complete the request because the RPL points to an ACB that has not been properly opened or that has been closed.		*Reg 15* *Reg 0* 32 Request code (see description of RPL's REQ field)	*Reg 15* *Reg 0* 32 Request code (LERAD-SYNAD not entered)	*Reg 15* *Reg 0* 32 Request code (LERAD-SYNAD not entered)	RPL not set.	All RPL-based macros	Obtain a program dump and correct the program.

Figure C-5 (Part 2 of 2). Completion Conditions Applicable for Completion of Synchronous Requests or for CHECK (after Asynchronous Requests) which types of errors cause LERAD and which cause SYNAD to be scheduled.) If the LERAD or SYNAD exit routine is executed upon return of control to the next sequential instruction registers 0 and 15 contain whatever values were placed in them by the exit routine. If ACF/VTAM cannot find an exit to schedule then it sets registers 0 and 15 and returns control to the next sequential instruction.

ACF/VTAM uses only two nonzero return codes in register 15: 4 and 32 (decimal). A return code of 32 is used when a failure of an OPEN is ignored by the application program; neither SYNAD nor LERAD are involved. A return code of 4 is used for all other types of errors for which a SYNAD or LERAD exit routine was not available. The register 15 return code is termed a *general return code.*

The "other types of errors" are organized into 6 classes according to the program recovery action that is appropriate for each error. ACF/VTAM generates a *recovery action return code* for each class and places the code in register 0 when control is returned to the application program or passed to the LERAD or SYNAD exit routine. ACF/VTAM also posts the recovery action return code in the RTNCD field of the RPL. The recovery action return codes occur in increments of 4 to facilitate their use in branching tables.

Note: *The recovery action return code is posted when the request's ECB is posted; if you modify RTNCD before checking the request, ACF/VTAM does not reset the code.*

ACF/VTAM also generates a *specific error return code* that defines the exact type of error within the recovery action category. The specific error return code is placed by ACF/VTAM into the FDBK2 field of the RPL.

These return codes do not occur in increments of 4; multiply them by 4 if a branching table is to be used. The specific error return codes are described below.

To summarize:

- There are three general return codes: 0 (normal), 4 (abnormal, LERAD or SYNAD not accessible to ACF/VTAM), and 32 (abnormal, failure to detect prior OPEN failure).
- There are six recovery action return codes that apply for abnormal completion. These are posted in the RTNCD field of the RPL and in register 0. If LERAD or SYNAD are invoked, the exit routine can return its own register 0 and 15 values to the next sequential instruction.
- There are numerous specific error return codes that apply for abnormal completion. These are posted in the FDBK2 field.

Specific Error Return Codes (FDBK2)

The return code set in the FDBK2 field is meaningful only when it is considered together with the recovery action return code in the RTNCD field.

You can determine the setting of the RTNCD or FDBK2 fields with either the SHOWCB or TESTCB macro instructions. For example:

```
SHOWCB        AM=VTAM,RPL=RPL1,FIELDS=(RTNCD,FDBK2),
              AREA=WORKAREA,LENGTH=8
```

Since both RTNCD and FDBK2 have been specified in the FIELDS operand, both fields will be copied into WORKAREA. Note that WORKAREA is 8 bytes long. SHOWCB right-justifies each field in the *fullword* that you supply, and sets the first 3 bytes to 0. Since two fields are being used in this example, a 2-fullword work area is required.

A TESTCB macro instruction might look like this:

```
TESTCB          AM=VTAM,RPL=RPL1,RTNCD=12
```

The feedback fields must be tested serially, since TESTCB works only with one control block field at a time. Thus another TESTCB macro instruction would be required to test the contents of the FDBK2 field.

Figure C-6 shows the RTNCD-FDBK2 combinations that are valid for a given macro instruction. Only the RPL-based macro instructions are included, since feedback posting applies only to RPL-based macro instructions. CHECK and EXECRPL are not shown because *all* of the indicated RTNCD-FDBK2 combinations are possible upon return from them.

Although specific error return codes apply only when RTNCD contains a nonzero recovery action code, this figure includes some FDBK2 values for RTNCD=0. These are additional information codes that apply to certain normally-completing requests. These codes are explained in the text following Figure C-6.

The horizontal lines in Figure C-6 do not imply any logical grouping; they have been inserted simply for legibility.

Once you have used Figure C-6 to determine which RTNCD-FDBK2 combinations are possible for a particular macro instruction, refer to the return code descriptions below for an explanation of each RTNCD-FDBK2 combination.

Should you detect a return code during program execution *other* than one described in these figures, you should cease attempting to communicate with the terminal. You may wish to use SHOWCB macro instructions to extract the contents of the RPL fields, and you should obtain a program dump. Save your source listings and any program execution output for IBM program systems representatives.

Normal or Conditional Completion: With normal completion, the RTNCD of X'00' is placed in register 15 and the FDBK2 return code of X'00' is placed in register 0. With conditional completion, the RTNCD of X'00' is placed in register 15 and the FDBK2 error return code is placed in register 0.

RTNCD	FDBK2	
0	0	Normal completion or request accepted

The operation has been completed normally or the request has been accepted.

0	1	RESET (COND) issued with I/O in progress

You issued a conditional RESET (OPTCD=COND), and since an I/O operation for the terminal had already reached the data transfer stage, the I/O operation has not been canceled.

0	2	Normal completion with data

A RESET (OPTCD=COND) macro instruction was completed normally, but solicited data from the terminal already resides in ACF/VTAM's buffers. This data should be obtained with READ macro instructions.

0	5	Input area too small

You issued INQUIRE or INTRPRET and specified an input work area that is too small. ACF/VTAM has placed the reuired length (in bytes) in the RPL's RECLEN field. No data has been placed in the work area.

Obtain a work area that is at least as long as the value set in RECLEN, place the length in the AREALEN field, and reissue INQUIRE or INTRPRET.

RTNCD   FDBK2

0   6   No input available

A RECEIVE or RCVCMD with OPTCD=NQ was issued and there was no input of the specified RTYPE available to satisfy the macro instruction, or a RCVCMD with OPTCD=NQ was issued and no input was available to satisfy the macro instruction.

0   7   INQUIRE information not available

You issued INQUIRE (OPTCD=LOGONMSG) to obtain a logon message and there is none; you issued INQUIRE (OPTCD=SESSKEY) to obtain the cryptographic session key, and there is none; you issued INQUIRE (OPTCD=TERMS or DEVCHAR) for a cross-domain resource; you issued INQUIRE (OPTCD=TOPLOGON) for queued logons, and there are none, or you issued INQUIRE (OPTCD=CIDXLATE) for a terminal or logical unit that has not been connected.

The problem may be due to an incorrectly set NAME field in the NIB, a failure on the part of the user to create the entry during ACF/VTAM definition, or a VARY command issued by the network operator that deactivated the entry.

0   8   OPNDST (ACQUIRE) or SIMLOGON (NQ) failed

An OPNDST (ACQUIRE) or SIMLOGON (NQ) failed for one of the following reasons: The requested terminal or logical unit is already connected to another application; an OPNDST (ACQUIRE) was issued (instead of an OPNDST ACCEPT) to accept a pending logon from a terminal or logical unit; the secondary application program has not issued a SETLOGON (OPTCD=START) to allow its SCIP exit routine to receive the session parameters in a Bind command; an OPNDST (instead of an OPNSEC) was issued by a secondary application program to accept session parameters in a Bind command.

0   9   OPNDST (ACCEPT) denied–no logons

You attempted to accept a terminal or logical unit, and you indicated that your request should be rejected if no terminal or logical unit is waiting to be accepted (OPTCD=NQ). There is no logon queued for your application program, and so the request is rejected.

You reissued an OPNDST (OPTCD=ACCEPT) after a previous failure resulting from a temporary storage shortage and did not log on again. Relogon using a SIMLOGON or VARY LOGON and then reissue the OPNDST.

Unsuccessful Acceptance or Completion: When a request is not accepted or completed abnormally, the RTNCD is placed in register 0 and a specific error return code is placed by ACF/VTAM into the FDBK2 field of the RPL.

4   0   RVI received

The terminal responded to your output operation with an RVI (reverse interrupt) response. When this response is received, an error lock is set for the terminal. RVIs apply only to binary synchronous devices.

4   1   Attention or reverse break received

The terminal either responded to your output operation with an attention interruption or reverse break, or terminated its transmitted data with an attention interruption or reverse break. This bit is set only for 2741 Communication Terminals and 1050 Data Communication System Terminals.

RTNCD	FDBK2	OPNDST	CHANGE	SIMLOGON	CLSDST	SETLOGON	INQUIRE	INTRPRET	DO	SOLICIT	READ	WRITE	RESET	SEND	RECEIVE	RESETSR	SESSIONC	RCVCMD	SENDCMD	REQSESS	OPNSEC	TERMSESS
0 (X'00')	0 (X'00')	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	1 (X'01')								X				X									
	2 (X'02')								X				X									
	5 (X'05')						X	X														
	6 (X'06')														X				X			
	7 (X'07')						X															
	8 (X'08')	X		X																		
	9 (X'09')	X																				
4 (X'04')	0 (X'00')								X			X										
	1 (X'01')								X		X	X										
	2 (X'02')								X		X	X										
	3 (X'03')														X							
	4 (X'04')													X	X		X					
8 (X'08')	0 (X'00')	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
12 (X'0C')	0 (X'00')								X		X	X										
	1 (X'01')								X		X	X		X	X							
	2 (X'02')								X		X	X		X	X							
	3 (X'03')								X		X	X										
	4 (X'04')								X	X		X	X									
	5 (X'05')	X	X						X		X	X	X									
	6 (X'06')								X		X	X	X									
	7 (X'07')													X	X	X	X					
	8 (X'08')													X	X	X	X					
	9 (X'09')	X																				
	10 (X'0A')								X		X	X			X							
	11 (X'0B')		X		X				X		X	X	X	X	X	X	X			X		
	12 (X'0C')													X	X	X	X					
	13 (X'0D')													X								
	14 (X'0E')								X			X										
	15 (X'0F')								X			X										
16 (X'10')	0 (X'00')	X		X	X															X	X	X
	1 (X'01')	X		X																X		
	2 (X'02')				X															X		
	3 (X'03')	X		X		X			X		X	X		X	X					X	X	
	4 (X'04')								X		X	X	X									
	5 (X'05')	X	X						X		X	X	X	X	X	X	X					
	6 (X'06')	X	X						X		X	X	X									
	7 (X'07')								X		X	X	X	X	X		X					
	8 (X'08')								X		X	X										
	9 (X'09')													X	X	X	X					
	10 (X'0A')	X	X	X	X		X	X			X	X		X	X					X	X	X
	11 (X'0B')								X		X	X										
	12 (X'0C')								X		X	X										

Figure C-6 (Part 1 of 4). RTNCD-FDBK2 Combinations Possible for Each Macro Instruction

RTNCD	FDBK2	OPNDST	CHANGE	SIMLOGON	CLSDST	SETLOGON	INQUIRE	INTRPRT	DO	SOLICIT	READ	WRITE	RESET	SEND	RECEIVE	RESETSR	SESSIONC	RCVCMD	SENDCMD	REQSESS	OPNSEC	TERMSESS
16 (X'10')	13 (X'0D')			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
	14 (X'0E')			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
	15 (X'0E')													X	X	X	X			X		X
	16 (X'10')													X	X	X	X					
	17 (X'11')	X																				
	18 (X'12')						X													X		X
20 (X'14')	0 (X'00')	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	2 (X'02')	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X
	3 (X'03')	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X
	4 (X'04')	This code applies only to check.																				
	16 (X'10')	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X
	17 (X'11')														X							
	18 (X'12')	X	X	X	X				X	X	X	X	X	X	X	X	X					
	19 (X'13')		X	X	X		X	X	X	X	X	X	X	X	X	X	X					X
	20 (X'14')								X													
	21 (X'15')								X													
	22 (X'16')								X	X												
	23 (X'17')								X		X											
	24 (X'18')								X			X										
	25 (X'19')								X			X										
	26 (X'1A')								X			X										
	27 (X'1B')											X										
	28 (X'1C')											X										
	29 (X'1D')								X													
	30 (X'1E')						X	X	X		X	X		X	X			X	X	X		
	31 (X'1F')								X													
	33 (X'21')								X													
	35 (X'23')	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
	36 (X'24')								X													
	37 (X'25')								X			X										
	39 (X'27')												X									
	40 (X'28')								X			X										
	41 (X'29')								X													
	42 (X'2A')								X													
	43 (X'2B')								X			X										
	44 (X'2C')								X			X	X									
	45 (X'2D')								X				X									
	46 (X'2E')								X	X	X											
	47 (X'2F')								X													
	48 (X'30')								X													
	49 (X'31')								X			X										
	50 (X'32')								X	X	X	X	X									
	51 (X'33')								X			X										

Figure C-6 (Part 2 of 4). RTNCD-FDBK2 Combinations Possible for Each Macro Instruction

RTNCD	FDBK2	OPNDST	CHANGE	SIMLOGON	CLSDST	SETLOGON	INQUIRE	INTRPRET	DO	SOLICIT	READ	WRITE	RESET	SEND	RECEIVE	RESETSR	SESSIONC	RCVCMD	SENDCMD	REQSESS	OPNSEC	TERMSESS
20 (X'14')	52 (X'34')								X			X	X									
	53 (X'35')								X													
	54 (X'36')								X				X									
	55 (X'37')								X													
	57 (X'39')								X	X	X	X	X									
	59 (X'3B')													X								
	60 (X'3C')													X			X					
	64 (X'40')													X			X					
	65 (X'41')													X	X							
	66 (X'42')																X					
	68 (X'44')													X								
	71 (X'47')													X								
	72 (X'48')																X					
	73 (X'49')																X					
	74 (X'4A')							X														
	75 (X'4B')	X		X	X		X	X												X		
	76 (X'4C')						X	X														
	77 (X'4D')							X														
	78 (X'4E')	X																				
	79 (X'4F')	X																				
	80 (X'50')	X		X																		
	81 (X'51')	X		X																		
	82 (X'52')	X	X	X	X		X													X	X	X
	83 (X'53')	X	X	X	X		X													X	X	X
	84 (X'54')	X																			X	X
	85 (X'55')	X		X	X		X	X												X	X	
	86 (X'56')	X																				
	87 (X'57')	X	X																			
	91 (X'5B')			X	X																	
	92 (X'5C')	X		X																		
	93 (X'5D')		X		X																	
	94 (X'5E')				X																	
	95 (X'5F')				X																	
	96 (X'60')				X																	X
	97 (X'61')					X																
	98 (X'62')		X						X	X	X	X	X	X	X	X	X					

Figure C-6 (Part 3 of 4). RTNCD-FDBK2 Combinations Possible for Each Macro Instruction

RTNCD	FDBK2	OPNDST	CHANGE	SIMLOGON	CLSDST	SETLOGON	INQUIRE	INTRPRET	DO	SOLICIT	READ	WRITE	RESET	SEND	RECEIVE	RESETSR	SESSIONC	RCVCMD	SENDCMD	REQSESS	OPNSEC	TERMSESS
20 (X'14')	108 (X'6C')																	X				
	109 (X'6D')																	X	X			
	110 (X'6E')																		X			
	111 (X'6F')																	X	X			
	112 (X'70')																	X	X			
	113 (X'71')																		X			
	114 ((X'72')																					X
	115 (X'73')																			X		

Figure C-6 (Part 4 of 4). RTNCD-FDBK2 Combinations Possible for Each Macro Instruction

When the attention interruption or reverse break is detected, an error lock is set for the terminal.

RTNCD	FDBK2	
4	2	SENSE field set

The RPL's SENSE field has been set because a sense/status message has been received from a BSC device. Near the end of this appendix there is a brief description of the type of information provided in the SENSE field. You must refer to the component description manual of each terminal for an explantion of this information.

4	3	Exception condition for incoming message

A message has been received for which an exception condition exists. The reason for the error is contained in the RPL's SSENSEI and SSENSMI fields. All messages in the current chain that have already been received by the application program should be discarded. Issue RECEIVE macros with OPTCD=TRUNC, AREALEN=0 until CHAIN=LAST or CONTROL=CANCEL is received. No responses should be sent for any element in the rest of the chain. If a negative response has not already been sent to an element of this chain and if this request requires a response, move the input sense fields to the output sense fields and send a negative response.

4	4	Incoming response indicates exception condition

The logical unit (or some other node in the network) has sent a response indicating that an exception condition was detected for one of the messages the application program sent. The SEQNO field indicates the sequence number of the request to which the negative response applies. The SSENSEI and SSENSMI (or the USENSEI) fields indicate the reason for the error condition.

If the message is part of the chain currently being transmitted to the logical unit, the application program should terminate the chain by issuing a SEND with STYPE=REQ, CONTROL=DATA, and CHAIN=LAST or a SEND with STYPE=REQ and CONTROL= CANCEL to indicate where the logical unit can stop discarding the messages it has been receiving. If chain elements beyond the one in error have already been sent, the SEND (POST=RESP) macros for these messages are completed with RTNCD=12 and FDBK2=13 ('request canceled by prior exception message'). If the sequence numbers need to be reset (back to the beginning of the chain, for example) a SESSIONC with CONTROL=STSN should be issued. Use SESSIONC with CONTROL=CLEAR.

RTNCD FDBK2

8 0 Temporary storage shortage

ACF/VTAM is temporarily unable to secure enough storage to process the request. The request can be reissued (with EXECRPL, for example), unless it is the first SETLOGON (OPTCD=START) issued after opening the ACB or it is an OPNDST (OPTCD=ACCEPT). If it is the first SETLOGON after opening the ACB, you must wait and try again later. If it is an OPNDST, you must log on again using a SIMLOGON before you can reissue the OPNDST. Failure to do so may result in the failure of the OPNDST a second time with return codes of RTNCD=0 and FDBK2=9.

This return code may also be posted if the application program has not specified a large enough region size (OS/VS1 only).

12 (X'0C') 0 Error lock set

An error lock has been set for the device that is the object of the I/O request. The SENSE field may contain status/sense information (if it does not, the field will be set to 0).

Error locks are set by the operating system or by the communication controller's Network Control Program when an I/O error condition is detected that prevents successful completion of the operation.

When an error lock is set for a terminal, no further I/O can be accomplished until the error lock is reset with a RESET macro instruction. If I/O requests are issued while the error lock is still set, they will remain pending until RESET is finally issued.

Two forms of RESET (OPTCD=UNCOND and OPTCD=LOCK) cause the error lock to be reset. You may prefer to use the LOCK form, which resets the error lock without canceling any pending I/O requests you may have issued since the error lock was set, or that have been queued since the error lock was set.

12 (X'0C') 1 Terminal not usable or powered-off

This code is set when the communications controller detects either a hardware check for the terminal or a modem check for the terminal's modem, or when the dial-line disconnection occurs for a dial-in terminal. Hardware and modem checks are discussed in *IBM 3704 and 3705 Communications Controller Principles of Operation,* GC30-3004. In general, this return code means that the terminal is no longer usable and should be disconnected.

This code is received when a basic-mode terminal (except a 3270) is polled and is found to be powered-off. It is received when a basic-mode or record-mode 3270 terminal is polled and the 3271 controller to which it is attached is powered-off. If the 3271 controller is powered-on but the 3270 terminal is powered-off, no return code is returned until the terminal is powered-on. See the 3270 device-dependent considerations in Appendix I.

RTNCD FDBK2

12 (X'0C') 2 Request canceled by test request message

This I/O operation has been canceled because the terminal operator requested connection to the Teleprocessing Online Test Executive Program (TOLTEP). If a LOSTERM exit routine is available; it has been scheduled. The terminal must be disconnected (CLSDST with OPTCD=RELEASE). Any further attempts to communicate with the terminal will be rejected by ACF/VTAM. You should reestablish connection with the terminal in the same manner in which the connection was initially established—either by acquiring the terminal or by accepting it.

12 (X'0C') 3 Buffer now emptied

Prior to the receipt of this return code, ACF/VTAM's input buffers for the terminal or logical unit were exhausted. The input request that empties the final block of data from the buffer receives this return code. You may now continue communicating normally with the terminal or logical unit. Refer also to the explanation for RTNCD=12 and FDBK2=4 which follows.

12 (X'0C') 4 Buffers filled

Solicited data has exhausted ACF/VTAM's buffers. All I/O operations other than READ are invalid until the buffers have been emptied. To empty the buffers, reissue READ macro instructions until RTNCD=12 and FDBK2=3 (buffers now emptied) is returned; this indicates that the last block of data has been moved into the application program.

It is possible that you are soliciting too large a unit of data—for example, you are soliciting a transmission, but the installation expected that you would never solicit more than a block at a time. Even the smallest unit of data (block) may be too large, and the only solution is for the installation to enlarge ACF/VTAM's buffer size.

The second general cause of this error is that you are not emptying ACF/VTAM's buffers at a rate approximately equal to the rate that the data is arriving. You may be issuing new SOLICIT requests without first verifying that you have obtained the last block of the previously solicited data.

12 (X'0C') 5 NCP abended, restart successful (basic mode only)

While your request was being processed, the communications controller's network control program (NCP) abnormally terminated. It has been successfully restarted, and you can reissue your request and continue. All affected I/O requests except the last one receive this return code (the last I/O request issued before the NCP abended receives a FDBK2=6 return code).

12 (X'0C') 6 NCP abended, restart successful (final I/O request) (basic mode only)

While this request was being processed, the communications controller's NCP abended and was successfully restarted. This is the last I/O request to be canceled because of the abend. An error lock has set. Any I/O requests issued *while* the NCP is an an abend condition are queued by ACF/VTAM until the NCP is restarted. The application program should either (1) issue RESET (OPTCD=LOCK) to allow other pending I/O requests for this terminal to proceed normally, or (2) issue RESET (OPTCD=UNCOND) to cancel all other pending I/O requests so that the application program can reissue them again in sequence.

RTNCD FDBK2

12 (X'0C') 7 Connection recovery in progress (record mode only)

Contact with the logical unit has been lost and a request was issued after connection recovery has been initiated. If a LOSTERM exit routine is available, it has been scheduled. No further communication with this terminal is possible until the terminal has been reconnected. Reconnection occurs automatically; the LOSTERM exit routine is rescheduled when the reconnection occurs.

12 (X'0C') 8 Logical unit restarted

The logical unit has experienced a failure but loss of contact has not occurred. However, the logical unit has in effect been disconnected from your application program. Issue CLSDST to complete the disconnection process. No RECEIVE macro instructions should be attempted prior to the disconnection. OPNDST may be attempted following the CLSDST. The application program is also informed of this condition via the LOSTERM exit routine.

12 (X'0C') 9 Device varied offline

The terminal or logical unit with which you are attempting to establish connection, or the application program to which you are attempting to pass a terminal or logical unit, is known to ACF/VTAM but has been (or is in the process of being) deactivated by the network operator.

12 (X'0C') 12 (X'0A') Request canceled by RESET or RESETSR

This I/O operation has been canceled by a RESET or RESETSR macro instruction issued by another part of your application program.

12 (X'0C') 11 (X'0B') Request canceled by CLSDST or a
CHANGE or CLSDST failed because a CLSDST
has already been issued

The request has been canceled because the session was terminated. Session termination always cancels any pending requests for the session, and returns this return code in the RPL. Session termination may be caused by the application program (CLSDST, TERMSESS), by the operator (VARY INACT), or by events in the network (loss of contact with a PU, for example).

12 (X'0C') 12 (X'0C') Request canceled by Clear command

While the request was being processed, a Clear command was sent to the logical unit. This stops all data flow and cancels all pending I/O requests for the logical unit. The Clear command may have been sent by your application program (SESSIONC macro), or the command may have been sent on behalf of your application program by ACF/VTAM or by the network operator (VARY INACT command).

12 (X'0C') 13 (X'0D') Request canceled by a prior exception message

A series of chained messages was being sent to the logical unit and a negative response was returned for one of them. All subsequent SEND macro instructions with POST=RESP for that chain are canceled with this return code.

RTNCD FDBK2

12(X'0C') 14(X'0E') Yielded to contention

You attempted to write to a terminal on a point-to-point contention line at the same time that the terminal attempted to gain control of the line. The system yielded the line to the terminal, and your output operation has been canceled.

12(X'0C') 15(X'0F') Yielded to contention (error lock set)

Following connection, you attempted to write to a terminal on a point-to-point contention line at the same time that the terminal attempted to gain control of the line. The system yielded the line to the terminal, and your output operation has been canceled. The error lock is set; issue RESET before attempting further communication.

16 (X'10') 0 Terminal, logical unit, application program, or application program status not available

This code is set for one of the following reasons:

- You are attempting to establish a connection with a terminal or logical unit that is not active.
- You are attempting to pass a terminal or logical unit to an application program that is not active (or is in the process of being deactivated).
- You are attempting to determine the status of an application program in another domain, but the CDRM associated with that application program is not active.

If you are attempting to determine the status of an application program that is in another domain, the status is not available, and your application program will have to proceed without it. If you are attempting to acquire a terminal or logical unit, it is unavailable, and your application program will have to proceed without it. If you are using a NIB list, no connections will have been established. If you are attempting to pass a terminal or logical unit, the receiving application program is unavailable. Your action in the latter case depends on why you are attempting to pass the terminal or logical unit to that application program. For example, if you are doing so in response to a terminal operator's request for reconnection, you will probably want to notify the terminal operator that the application program is unavailable.

16 (X'10') 1 OPNDST failed for logical unit

The OPNDST failed because no network path could be obtained, because a dial connection was not completed, because a negative response to a Bind was received, or because the logical unit does not exist. The SSENSEI and SSENSMI fields are set (these fields are described at the end of this appendix).

16 (X'10') 2 Application program does not accept logons

You attempted to disconnect a terminal or logical unit and pass it to another application program, but logons cannot be queued for that application program. Logon queuing is not permitted because the application program issued SETLOGON with OPTCD=QUIESCE (indicating it no longer accepts logons) or it opened its ACB with MACRF=NLOGON (indicating it never accepts logons).

16 (X'10') 3 HALT (quick) issued

The network operator has issued a HALT command, initiating a quick closedown. You cannot connect the terminal or logical unit to your application program.

A quick closedown means that you can no longer communicate with any terminals or logical units, and you should close the ACB. If you have a TPEND exit routine, it was invoked.

If a LOSTERM exit routine is available, it has been scheduled.

RTNCD FDBK2

16(X'10') 4 ACF/VTAM-NCP incompatibility

The I/O macro instruction failed because of incompatibilities between the output of the ACF/VTAM definition process and the Network Control Program generation process.

This problem can only be resolved by the installation.

The incompatibility probably exists because of a modification and regeneration of the Network Control Program that was accomplished without a corresponding redefinition of ACF/VTAM.

Before you can successfully attempt I/O with the terminal, the installation must remove the inconsistency that resulted in this return code. The most straightforward way of accomplishing this is to redefine ACF/VTAM, using the same input that was used to generate the *current* network control program.

16 (X'10') 5 Permanent channel, link, or cryptographic failure

Either a permanent channel failure, a permanent communication link failure to a remote communications controller, or a cryptographic function failure has occurred in the ACF/VTAM network.

16 (X'10') 6 Automatic NCP shutdown

The communications controller's network control program has shut down for one of two reasons; either the network operator has manually initiated shutdown from the communication controller panel, or the Network Control Program did not receive a response from the operating system within the time limit specified during network control program generation. You can no longer communicate with this terminal.

16 (X'10') 7 Request canceled by VARY command

The I/O operation has been canceled because the network operator deactivated the terminal or logical unit while the macro instruction was being processed. If a LOSTERM exit routine is available, it has been scheduled. You can no longer communicate with the terminal, and you should issue CLSDST to disconnect it from your application program.

16 (X'10') 8 Dial-line disconnection

A dial-line disconnection occurred for a BSC or start-stop terminal after the macro instruction began execution, but before the I/O operation itself was initiated. If a LOSTERM exit routine is available, it has been scheduled. If data is present in ACF/VTAM buffers, READ macro instructions can be issued to move the data into the application program.

If the terminal is a dial-out terminal, reissuing the I/O macro instruction may cause contact to be reestablished. If a LOSTERM exit routine is available, it is scheduled. If the terminal is a dial-in terminal, or if contact cannot be established for a dial-out terminal, issue CLSDST for the terminal.

16 (X'10') 9 Unconditional Terminate Self or character-coded logoff received

The logical unit has sent an unconditional Terminate Self command or character-coded logoff, which is a request for disconnection. No further communication with the terminal is possible. CLSDST must be issued.

RTNCD FDBK2

16 (X'10') 10 (X'0A') ACF/VTAM error

An error occurred in ACF/VTAM itself. No further attempts to connect or disconnect the terminal should be made.

16 (X'10') 11 (X'0B') Dial-line disconnection (dial-out terminal)

A dial-line disconnection occurred for a *dial-out*, BSC or start-stop terminal while the I/O request was being processed. If reissuing this request does not cause contact to be reestablished, CLSDST should be issued for the terminal.

Note that this return code applies to dial-in disconnections that occur *while* the I/O operation is in progress. When the dial-line disconnection occurs after the macro instruction begins execution but before the I/O operation is initiated—that is, while ACF/VTAM is waiting for a previous I/O operation to be completed—a RTNCD value of 16 (decimal) and a FDBK2 value of 8 are returned.

16 (X'10') 12 (X'0C') Dial-line disconnection (dial-in terminal)

A dial-line disconnection occurred for a *dial-in*, BSC or start-stop terminal while the I/O request was being processed. CLSDST should be issued for the terminal.

16 (X'10') 13 (X'0D') ACF/VTAM inactive to your ACB

The link between ACF/VTAM and your application program (ACB) that was established with OPEN has been broken. This may have occurred because you have elsewhere issued a CLOSE that has not yet completed, or it may have occurred because ACF/VTAM has become inactive.

16 (X'10') 14 (X'0E') Abend for program's TCB

An abend condition occurred for the user's task control block (TCB). The request was not accepted, no ECB has been posted, and no RPL exit-routine has been scheduled.

16 (X'10') 15 (X'0F') Buffers filled for record devices

An I/O request was issued for a logical unit, but ACF/VTAM's buffers were already filled and in the process of being cleared. The LOSTERM exit routine, if available, is scheduled.

Either the length or type of request expected is erroneous or the size of the buffer pool is too small. Make sure that the data or responses are correct, or advise your system programmer that the BUFFACT parameter of the APPL statement should indicate a larger buffer pool size.

16(X'10') 16(X'10') Conditional terminate command received

The logical unit has requested disconnection by sending a Terminate command. The application program may issue a CLSDST macro instruction if it wishes to terminate the session.

16(X'10') 17(X'11') SDT failure on OPNDST

A negative response was sent by a logical unit in reply to a Start Data Traffic (SDT) command. The OPNDST was not completed successfully.

16(X'10') 18(X'12') Macro Instruction Failure

A REQSESS, TERMSESS, or INQUIRE (OPTCD=APPSTAT) has failed. A sense code is returned in the RPL for the failing macro instruction.

RTNCD FDBK2

20 (X'14') 0 VSAM request

The RPL contains a VSAM or other non-ACF/VTAM request code. No ECB has been posted and no RPL exit routine has been scheduled.

20 (X'14') 2 Zero EXIT field

The RPL indicates that the ECB-EXIT field is being used as an EXIT field, but the RPL exit routine address in it is 0. No RPL exit routine has been scheduled.

20 (X'14') 3 Zero ECB field

The RPL indicates that the ECB-EXIT field is being used to point to an external ECB, but the address in the field is 0. No ECB has been posted.

20 (X'14') 4 Inactive RPL checked

CHECK was issued for an inactive RPL (an RPL that had been posted complete and for which CHECK has already been issued succesfully). All RPL-based macros must use an inactive RPL. All CHECK macros, however, must use an active RPL; an RPL cannot be checked twice.

20 (X'14') 16 (X'10') Control block invalid

The RPL's ACB field does not contain the address of a valid ACB.

This may mean that the ACB field of the RPL was incorrectly set, the ACB has been destroyed. This return code applies only in OS/VS2.

20 (X'14') 17 (X'11') RTYPE invalid

A RECEIVE has been issued with the RTYPE field set to NDFSYN, NDFASY, and NRESP.

20 (X'14') 18 (X'12') CLSDST in progress

At the time this macro instruction was executed, a CLSDST request was pending for the terminal or logical unit. The CLSDST request takes priority, and the request that caused this return code cannot be honored.

20 (X'14') 19 (X'13') CID invalid

Either the RPL's ARG field or the NIB's CID field does not contain a valid CID.

You may have inadvertently modified the field or failed to set it in the first place, or you may have used the CID of a session with a terminal or logical unit that is no longer connected to your application program.

Another possibility is that you violated the following rule: When placing a CID into the RPL's ARG field, always use the ARG keyword–ARG=(6), for example–and when placing a NIB address into the RPL's NIB field, always use the NIB keyword–for example, NIB=(6). Since these two fields occupy the same 4 bytes in the RPL, ACF/VTAM can distinguish between a NIB address and a CID only through your use of the ARG or NIB keyword. Thus the presence of this return code could mean that you placed a NIB address in the RPL with the ARG keyword, and ACF/VTAM has rejected your "CID" as invalid.

If this error code applies to CHANGE or CLSDST, you can reissue the macro instruction using the terminal's or logical unit's symbolic name rather than the CID. A new CID can be obtained by supplying the symbolic name to an INQUIRE (OPTCD=CIDXLATE) macro instruction.

RTNCD   FDBK2

20 (X‘14’)   20 (X‘14’)   CMD field invalid

DO encountered an LDO whose CMD field does not contain a valid command code.

Since invalid syntax (such as CMD=WRIET specified instead of CMD=WRITE) would t revealed during program assembly, you either failed to set the CMD field before issuir DO, or you modified the CMD field incorrectly before ACF/VTAM processed the DO macro instruction.

The RPL's AAREA field contains the address of the faulty LDO. If DO was processing a series of LDOs, no I/O for the previous LDOs has been initiated, even though those LDOs are valid.

20 (X‘14’)   21 (X‘15’)   WRTNRLG or WRTPRLG LDO not chained before READ

You either failed to set the FLAGS field of a WRTNRLG or WRTPRLG LDO when you should have, or you used these LDOs with PROC=MSG, TRANS, or CONT instead of BLOCK. These LDOs must be command-chained to a READ LDO and PROC must be set to BLOCK. See the LDO macro instruction description for more information.

20 (X‘14’)   22 (X‘16’)   SOLICIT issued for an output-only terminal

You issued SOLICIT (OPTCD=SPEC) for a terminal that the installation has defined as an output-only device.

20 (X‘14’)   23 (X‘17’)   READ issued for an output-only terminal

You issued a READ (OPTCD=SPEC) for a terminal that the installation defined as an output-only device.

20 (X‘14’)   23 (X‘18’)   WRITE issued for an input-only terminal

You issued a WRITE macro instruction for a terminal that the installation has defined as an input-only device.

20 (X‘14’)   25 (X‘19’)   WRITE (ERASE) issued for an invalid terminal

You issued WRITE (OPTCD=ERASE) for the wrong type of terminal. Use this type of WRITE only to erase the screen of a display unit of a 3270 Information Display System, or of a 2265 Display Station attached to a 2270 Data Communications Terminal.

20 (X‘14’)   26 (X‘1A’)   WRITE (EAU) issued for an invalid terminal

You issued WRITE (OPTCD=EAU) for the wrong type of terminal. Use this type of WRITE only to erase the unprotected portion of the display unit screen of a 3270 Information Display System.

20 (X‘14’)   27 (X‘1B’)   WRITE (CONV) issued for an output-only terminal

You issued WRITE (OPTCD=CONV) for a terminal that the installation has defined as an output-only terminal. This is legitimate for an ordinary WRITE (OPTCD=NCONV), but a conversational WRITE includes an input operation.

RTNCD FDBK2

20 (X‘14’) 28 (X‘1C’) WRITE (ERASE and CONV) issued

You issued a WRITE with both the CONV option code and either the ERASE or EAU option codes specified. You cannot erase a screen with a conversational WRITE macro instruction.

20 (X‘14’) 29 (X‘1D’) COPYLBM or COPYLBT LDO chained

DO encountered a COPYLBM or COPYLBT LDO that had its FLAGS field set. You cannot set the FLAGS field of either of these LDOs (that is, you cannot command-chain them to other LDOs).

The LDO has not been processed. The RPL’s AAREA field contains the address of the faulty LDO. If DO was processing a series of LDOs, those preceding the faulty LDO have been successfully processed.

20 (X‘14’) 30 (X‘1E’) Invalid data or length

You requested an input operation and either supplied an input work area address that is beyond the addressable range of your application program, or you invalidly indicated that the work area length is 0.

Check the work area address and work area length fields in the RPL for an incorrect setting. For a DO macro instruction, these are the ADDR and LEN fields. For a READ, RECEIVE, RCVCMD, INTRPRET, or INQUIRE macro instruction, these are the AREA and AREALEN fields. For a WRITE (OPTCD=CONV) macro instruction, these are the AAREA and AAREALN fields. For a SEND or SENDCMD macro instruction, these are the AREA and RECLEN fields.

20 (X‘14’) 31 (X‘1F’) LDO address invalid

You issued a DO macro instruction, and indicated an LDO address that lies beyond the addressable range of the application program. Check the AREA field of DO’s RPL; you may have incorrectly modified the field, or never set an address in it before DO was executed.

20(X‘14’) 33(X‘21’) Over 100 LDOs

More than 100 LDOs were chained together.

20 (X‘14’) 35 (X‘23’) Request type invalid

When an I/O macro instruction is issued, ACF/VTAM sets the REQ field in the RPL to indicate the type of macro instruction that is using the RPL. The presence of this return code indicates that you modified that code before the requested operation completed. To avoid this and other related errors, never modify an RPL while it is in use. Compare with “VSAM request” (RTNCD=20, FDBK2=0).

20 (X‘14’) 36 (X‘24’) Invalid FLAGS field for a READ LDO

You misused the FLAGS field of a READ LDO. The FLAGS field cannot be used to command-chain a READ LDO to another LDO. See the description of the FLAGS operand in the LDO macro instruction for more information.

The RPL’s AAREA field contains the address of the faulty LDO.

RTNCD FDBK2

20 (X‘14’) 37 (X‘25’) WRITE (ERASE and BLK) issued

You issued a WRITE (OPTCD=ERASE) macro instruction that also had the BLK option code specified. For a 3270 display screen, the use of BLK is never permitted in a WRITE macro instruction. For a 2770 display screen, the use of BLK together with ERASE is not permitted in the same WRITE macro instruction.

20 (X‘14’) 39 (X‘27’) RESET option code invalid

Before ACF/VTAM completed processing the RESET macro instruction, it discovered that the COND-UNCOND-LOCK option code was not properly set. Since you cannot incorrectly set this option code using ACF/VTAM macro instructions (the macro instruction would not be assembled), you have probably modified the RPL's OPTCD field with assembler instructions and destroyed the bit settings that represent COND, UNCOND, or LOCK.

20 (X‘14’) 40 (X‘28’) WRITE (BLK) issued

You used a WRITE macro instruction (or WRITE LDO) to send data to a display screen of a 3270 Information Display System, but the BLK option code is set. When writing to a 3270 display station, you can set the BLK-LBM-LBT option code to either LBM or LBT, but not to BLK.

20 (X‘14’) 41 (X‘29’) READBUF used with invalid terminal

You used a READBUF LDO for an ineligible device. Use the READBUF LDO only for a display station of a 3270 Information Display System.

20 (X‘14’) 42 (X‘2A’) COPYLBM or COPYLBT used with invalid terminal

A COPYLBM or COPYLBT LDO can only be used with a 3277 display station as the “from” device.

20 (X‘14’) 43 (X‘2B’) WRITE (CONV) when data expected

A WRITE (OPTCD=CONV) was issued to a terminal from which data is already expected because of a previous READ, SOLICIT, or conversational WRITE operation.

20 (X‘14’) 44 (X‘2C’) Output not preceded by input

You used a RESET or WRITE macro instruction, or a WRITE LDO, for a 3735 Programmable Buffered Terminal without first using a SOLICIT or READ (OPTCD=SPEC) macro instruction, or a READ LDO.

The first I/O request directed at this type of terminal following connection must be a request that causes data to be solicited from the terminal.

20 (X‘14’) 45 (X‘2D’) RESET (COND) issued—error lock set

You issued a RESET (OPTCD=COND) macro instruction for a terminal, but an error lock is set for that terminal. This form of RESET cannot be used if the error lock is set. The UNCOND form of RESET is valid in this situation, however, and the LOCK form may be valid as well. See the RESET macro instruction description.

20 (X‘14’) 46 (X‘2E’) BLOCK-MSG-TRANS-CONT invalid

While processing a solicit request, ACF/VTAM discovered that the BLOCK-MSG-TRANS-CONT processing option was not properly set in the NIB when OPNDST was issued. You may have inadvertently modified this field, or used a processing option not valid for the device. See the NIB macro instruction for further information.

RTNCD FDBK2

20 (X‘14’) 47 (X‘2F’) Too many leading graphic characters

You attempted to send too many leading graphic characters with a positive or negative response.

When you use the WRTPRLG or WRTNRLG LDOs, the ADDR and LEN fields of the LDO must indicate the address and number of leading graphic characters to be sent. The maximum number that can be sent is 15; the value you placed in the LEN field exceeds this limit.

The RPL’s AAREA field contains the address of the invalid LDO.

20 (X‘14’) 48 (X‘30’) Invalid LEN (COPYLBM or COPYLBT LDOs)

You failed to properly set the LEN field of a COPYLBM or COPYLBT LDO.

When you use either of these LDOs, the ADDR field must indicate the address of a 3-byte data area. Even though the length of this area is fixed, the LEN field must nevertheless be set to 3. ACF/VTAM found a value in the LEN field that was not 3.

20 (X‘14’) 49 (X‘31’) Invalid data area

Either all or part of the output data area lies beyond the addressable range of your application program.

20 (X‘14’) 50 (X‘32’) Request invalid for specified device

The I/O request failed because the requested operation is invalid for the particular type of terminal or logical unit to which it is directed. The error lock has been set.

This return code results when you violate these rules:

When you establish NIB processing options with OPNDST or CHANGE, do not use a processing option that is not applicable for the particular device that is the object of the OPNDST or CHANGE macro instruction. Figure 7 (at the end of the NIB macro instruction description) shows which processing options apply to each type of terminal.

Use the READ, WRITE, WRITELBM, WRITELBT, WRTHDR, WRTPRLG, and WRTNRLG LDOs only with a System/3 or System/370 CPU.

20 (X‘14’) 51 (X‘33’) WRITE canceled (input data arriving)

You attempted to send data to a terminal at the same time that data was being solicited from it. Normally, this is no problem because the write operation is suspended until the solicitation is completed. For a BSC device, however, the write operation is canceled unless the terminal has just sent a data block ending with an ETX character (that is, has just finished sending a message).

Thus for a BSC device, the receipt of this return code indicates that when the WRITE was issued, the terminal was sending data that was not the last block of a message, and the write operation has been canceled.

RTNCD FDBK2

20 (X‘14’) 52 (X‘34’) First I/O request not READ or SOLICIT

For a dial-in BSC terminal, the first I/O request following connection must be a SOLICIT or READ (OPTCD=SPEC) macro instruction. You have used some other macro instruction as your first I/O request.

20 (X‘14’) 53 (X‘35’) Terminals not attached via same control unit

You attempted to use the COPYLBM or COPYLBT LDO to move data between two 3270 terminals that are not part of the same 3270 Information Display System. The terminals that are the objects of these LDOs must be connected to the same control unit.

You have incorrectly specified the identities of the two terminals. The ARG field of the DO macro instruction's RPL must contain the CID of the “to” terminal. The ADDR field of the LDO must contain the address of a 3-byte data area; the first byte of this data area must contain a 3270 copy control character, and the remainder of the data area must consist of the right-most two bytes of the “from” terminal's CID.

The error lock is set for the receiving terminal (the terminal whose CID is in the ARG field),but not for the “from” terminal.

20 (X‘14’) 54 (X‘36’) RESET (LOCK) invalid

You attempted to use the LOCK form of RESET in a situation in which you should have used the UNCOND form of RESET instead.

For an explanation of the restrictions that apply to the LOCK form of RESET, see the description of the RESET macro instruction (OPTCD=LOCK).

20 (X‘14’) 55 (X‘37’) Terminal not connected

You attempted to use the COPYLBM or COPYLBT LDO but the “from” terminal is not connected to your application program. More precisely, the “from” terminal is not connected via the ACB that you indicated in the RPL's ACB field.

20 (X‘14’) 57 (X‘39’) Invalid PROC option

ACF/VTAM completed an OPNDST normally but the setting you supplied in the NIB's field is invalid. This error is detected when the first I/O request is issued for the terminal.

20 (X‘14’) 59 (X‘3B’) NFME-NRRN response

You attempted to send a negative response with the RESPOND field set to NFME and NRRN. A response must be identified as FME, RRN, or both; in effect, you have identified the response as neither.

20 (X‘14’) 60 (X‘3C’) Previously scheduled output or request still pending

You issued a SEND (POST=SCHED), an expedited data flow control command, or SESSIONC macro instruction before a previous one had been completed. Only one such macro instruction can be outstanding at one time. After the previous macro instruction has been completed, this macro instruction can be reissued.

20 (X‘14’) 64 (X‘40’) CONTROL invalid

You modified the bits in the CONTROL field, or you used a CONTROL value for a SESSIONC macro instruction that was not SDT, CLEAR, or STSN.

RTNCD FDBK2

20 (X'14') 65 (X'41') Data traffic not allowed

You attempted to communicate with a logical unit to which no Start Data Traffic (SDT) command has been sent or for which a Clear is in progress. Until a logical unit is sent an SDT command, no traffic flow is possible; only SDT, Set and Test Sequence Numbers (STSN), Request Recovery (RQR), and Clear commands can be exchanged. Every time a Clear command is sent to a logical unit, a new SDT command may be required before traffic flow can resume (depends upon the transmission services profile used). This error can occur on a SEND if ACF/VTAM or the network operator disconnects the logical unit, or on a RECEIVE before an SDT is sent.

20 (X'14') 66 (X'42') Invalid STYPE for SESSIONC

STYPE=RESP has been specified for a SESSONC Clear or RQR macro instruction. Only STYPE=REQ is valid.

20 (X'14') 68 (X'44') RESPLIM exceeded

The number of outstanding SEND (POST=RESP) macro instructions for a terminal exceeds the RESPLIM value set in the logical unit's NIB.

20 (X'14') 71 (X'47') 3270 SEND option invalid

The RPL specified by your 3270 SEND macro instruction had one or more of the following fields invalid: STYPE, RESPOND, CHAIN, or CONTROL.

If the RPL was last used for a RECEIVE for the 3270, check the RESPOND field first; you may have failed to reset the field following the RECEIVE (RECEIVE sets the RESPOND field to NEX, NFME, NRRN in this case).

20 (X'14') 72 (X'48') Redundant Clear command or
invalid session control command

You attempted to send a Clear command to the logical unit but no Start Data Traffic (SDT) command has been sent. Since traffic flow is already stopped, the Clear command is redundant.

You issued a SESSIONC (CONTROL=SDT or STSN) before you issued a Clear command.

20 (X'14') 73 (X'49') INTRPRET sequence or LOGMODE invalid

You attempted to send a Set and Test Sequence Number (STSN) command to the logical unit and set the IBSQAC and/or OBSQAC fields to some value other than SET, TESTSET, IGNORE, or INVALID. See Figure 13 in the SESSIONC macro instruction description.

20 (X'14') 74 (X'4A') Application program name not available

You issued an INTRPRET macro instruction; ACF/VTAM has located the appropriate entry in the interpret table, and found that the installation has specified a routine to provide the identity. That routine, however, has not been loaded.

20 (X'14') 75 (X'4B') INTRPRET sequence or LOGMODE invalid

You issued an INTRPRET macro instruction but ACF/VTAM cannot locate an entry in the interpret table that corresponds to the sequence you provided.

You may have inadvertently modified the sequence or the address in the RPL's AREA field which points to the sequence. Or, the installation may have failed to properly define the entry in the interpret table.

Once your application program has been tested and debugged, and you know that none of the foregoing situations exists, you can assume this: the terminal operator or program that initiated the logon must have passed your application program an invalid logon sequence.

You issued an INQUIRE, OPNDST, SIMLOGON, or CLSDST (OPTCD=PASS) macro instruction. The NIB for this request specified a logon mode name that could not be found in the logon mode table for the logical unit named in that NIB.

RTNCD FDBK2

20 (X'14') 76 (X'4C') No terminal, logical unit or application program name

You issued INQUIRE or INTRPRET, and failed to properly provide ACF/VTAM with the identity of the terminal, logical unit or application program:

- INQUIRE (OPTCD=APPSTAT) was issued and the name was not that of an application program.
- INQUIRE (OPTCD=BSCID) was issued and the name was not that of a terminal containing a UTERM parameter in its TERMINAL entry.
- INQUIRE (OPTCD=TERMS) was issued and the name was not that of a cluster controller, component, terminal, line, group, local 3270, physical unit, logical unit, or UTERM entry.
- INQUIRE (OPTCD=DEVCHAR) was issued and the name is that of an application program.
- INQUIRE (OPTCD=LOGONMSG) was issued and no logons were queued for the application program.
- INQUIRE (OPTCD=LOGONMSG) was issued and the name was not that of a terminal, component, local 3270, or logical unit.
- INQUIRE (OPTCD=SESSPARM) was issued with LOGMODE=0 in the NIB, and no logons were queued for the application program.
- INTRPRET was issued and the name was not that of a terminal, component, or logical unit.

Assuming that the installation properly defined the entry in the resource definition table for the terminal, logical unit or application program, you have probably done one of the following: (1) failed to place a valid CID in the RPL's ARG field; (2) failed to place a valid NIB address in the RPL's NIB field; (3) if you did set the RPL's NIB field correctly, you failed to set a valid symbolic name in the NIB's NAME field; or (4) INQUIRE SESSPARM was issued correctly, but the session has been purged.

20 (X'14') 77 (X'4D') No interpret table

You issued an INTRPRET macro instruction, but there is no interpret table for the terminal. The installation may have failed to include an interpret table for this terminal during the ACF/VTAM definition process.

20 (X'14') 78 (X'4E') Invalid use of a NIB list

You attempted to accept a terminal without setting the NIB's LISTEND field to YES.

When OPNDST (OPTCD=ACCEPT) is issued, the NIB pointed to by the RPL must have its LISTEND field set to YES. Since this is the LISTEND setting that is assumed unless you specify otherwise, you must have used the LISTEND=NO operand when you last modified the NIB.

20 (X'14') 79 (X'4F') ACQUIRE-ACCEPT option code invalid

The OPNDST request failed because bits in the OPTCD field have been incorrectly set. The particular bits that have been incorrectly set are those that form the ACQUIRE-ACCEPT option code. This return code does not mean that the ACQUIRE option was erroneously used in place of ACCEPT, or vice versa; it means that neither ACCEPT nor ACQUIRE is indicated in the OPTCD field.

Since you cannot cause the field to be incorrectly set in this manner by using ACF/VTAM macro instructions, you may have inadvertently modified the OPTCD field with assembler instructions.

RTNCD FDBK2

20 (X'14') 80 (X'50') RPL field invalid

The OPNDST or REQSESS failed because the bits in the RPL's OPTCD or AAREA field were found to be invalid. If an OPNDST failed, the particular bits that have been incorrectly set are those that form the CONANY-CONALL option code. This return code does not mean that the CONANY option was erroneously used in place of CONALL, or vice versa; it means that neither CONALL nor CONANY is indicated in the OPTCD field.

Since you cannot cause the field to be incorrectly set in this manner by using ACF/VTAM macro instructions, you may have inadvertently modified the OPTCD field with assembler instructions.

If a REQSESS failed, either OPTCD=NQ was not specified or the AAREA field of the RPL was not set to zero.

20 (X'14') 81 (X'51') Application program never accepts logons

You attempted to accept a terminal or logical unit or generate a simulated logon request for a terminal or logical unit, but logon request queuing cannot occur because you opened your ACB with MACRF=NLOGON.

20 (X'14') 82 (X'52') NIB invalid

The request failed because there is no NIB at the location indicated in the RPL's NIB field.

20 (X'14') 83 (X'53') Terminal logical unit or application program not found found

The symbolic name you supplied in the NIB's NAME field or indicated via the RPL's AAREA field does not have a corresponding entry in the resource definition table. Either you failed to correctly set the NAME field, the installation did not include the entry in the resource definition table during ACF/VTAM definition, or the network operator has not activated the segment containing the name. If you were using a NIB list, no connections have been established.

20 (X'14') 84 (X'54') Invalid terminal or logical unit name

The symbolic name you supplied in the NIB's NAME field corresponds to an entry in the resource definition table, but the entry is for a node with which you cannot establish connection—such as the Network Control Program of a communications controller. The only entries you can identify in the NAME field for OPNDST are the names of LU, TERMINAL, COMP, or LOCAL entries.

20 (X'14') 85 (X'55') OPNDST (ACQUIRE) not authorized or application program name not available

You attempted to acquire a terminal or logical unit (SIMLOGON or OPNDST) but the installation has denied you authorization to do so.

The installation may have specified during ACF/VTAM definition that your application program is not authorized to acquire any terminals or logical units. If you are authorized to acquire terminals or logical units and you still receive this return code, this means that an installation authorization routine has been invoked, and has determined that you cannot acquire the specific terminal or logical unit indicated in your request.

You issued an INTRPRET macro instruction; ACF/VTAM located the appropriate entry in the interpret table and found that the installation has specified a routine to provide the identity. That routine was loaded, but it failed to provide the name of an application program. It provided a nonzero value instead.

RTNCD FDBK2

20 (X‘14’) 86 (X‘56’) Invalid MODE field

You either specified MODE=BASIC for a logical unit or a BSC 3270 defined to use record mode, or you specified MODE=RECORD for a local 3270 or a BSC or start-stop terminal.

20 (X‘14’) 87 (X‘57’) No MODE field

You issued an OPNDST or CHANGE macro instruction and failed to set the NIB’s MODE field to BASIC or RECORD.

20 (X‘14’) 91 (X‘5B’) Invalid logon message address

The address of the logon message that you supplied in the RPL’s AREA field lies beyond the addressable range of your application program.

20 (X‘14’) 92 (X‘5C’) Duplicate terminal names

You supplied a NIB list and attempted to acquire the group of terminals or logical units represented in that list. ACF/VTAM found that at least two of the NIBs contain the same symbolic name in their NAME fields. None of the terminals or logical units have been connected to your application program.

20 (X‘14’) 93 (X‘5D’) CLSDST invalid (terminal or logical unit not connected)

The terminal or logical unit represented by the CID you supplied is not connected to your application program.

This return code applies to CHANGE or CLSDST (either OPTCD=PASS or OPTCD=RELEASE) used with a CID.

You may have placed the wrong CID into the ARG field or neglected to place a CID there at all (perhaps the field still contains a CID left over from a previous CLSDST request).

20 (X‘14’) 94 (X‘5E) CLSDST (PASS) not authorized

CLSDST (OPTCD=PASS) is a function whose use is authorized by the installation. You attempted to use this function, but the installation has not authorized you to pass terminals or logical units to other application programs. This CLSDST macro instruction should have been issued with RELEASE in effect, not PASS.

20 (X‘14’) 95 (X‘5F’) CLSDST (PASS) invalid

You attempted to disconnect a terminal or logical unit that is not connected to your application program. This return code applies to CLSDST (OPTCD=PASS) used with a terminal’s or logical unit’s symbolic name.

(CLSDST with a terminal’s or logical unit’s symbolic name is implemented by (1) placing the address of a NIB in the NIB field of CLSDST’s RPL and (2) placing the symbolic name in the NAME field of that NIB.)

RTNCD FDBK2

20 (X‘14’) 96 (X‘60’) CLSDST (RELEASE) invalid

You attempted to disconnect a terminal or logical unit that is not connected to your application program, or had no logon queued for your application program. This return code applies to CLSDST (OPTCD=RELEASE) used with a terminal's or logical unit's symbolic name or session CID.

The explanation provided for the previous return code (RTNCD value of 20 and FDBK2 value of 95) also applies to this return code when a NIB is used.

20 (X‘14’) 97 (X‘61’) Invalid SETLOGON

You issued SETLOGON, but the ACB's logon queue cannot be opened.

Either you opened the ACB with its MACRF field set to NLOGON or you already issued SETLOGON (OPTCD=QUIESCE) and permanently closed the logon queue. All forms of SETLOGON are thus invalid, since you are either attempting to open a logon queue that cannot be opened, or you are attempting to close a logon queue that is already closed.

20 (X‘14’) 98 (X‘62’) Wrong mode

Either you attempted to issue a basic-mode macro for a logical unit that was connected with MODE=RECORD, or you attempted to use a record-mode macro for a terminal that was connected with MODE=BASIC. See the MODE operand of the NIB macro instruction.

20 (X‘14’) 108 (X‘6C’) Exceeded limit on outstanding RCVCMD requests

You attempted to issue a RCVCMD macro instruction while a previous RCVCMD was outstanding. The current limit on outstanding RCVCMD requests is one.

20 (X‘14’) 109 (X‘6D’) Application program not authorized

Your application program is not authorized by your installation to issue the SENDCMD and RCVCMD macro instructions.

20 (X‘14’) 110 (X‘6E’) Syntax error in reply to network operator message

In reply to an ACF/VTAM network operator message, you issued a SENDCMD macro instruction that contained a syntax error in the REPLY command.

20 (X‘14’) 111 (X‘6F’) SENDCMD/RCVCMD processor inactive

The portion of ACF/VTAM that processes SENDCMD and RCVCMD macro instructions is currently inactive for your application program, and the application program issued a SENDCMD or RCVCMD macro instruction. The request cannot be processed because an ACB has not been opened for the portion of the application program that issued the SENDCMD or RCVCMD or because a final CLOSE has been issued for this ACB but has not yet completed.

20 (X‘14’) 112 (X‘70’) SENDCMD/RCVCMD processor closing its ACB

The portion of ACF/VTAM that processes SENDCMD and RCVCMD macro instructions is in the process of closing its own ACB, and you (1) issued a SENDCMD macro instruction for a command other than REPLY or (2) issued a RCVCMD with OPTCD=Q and there were no ACF/VTAM messages available to satisfy the request.

RTNCD FDBK2

20 (X‘14’) 113 (X‘71’) Operator command not valid

You attempted to send an ACF/VTAM network operator command to ACF/VTAM using the SENDCMD macro instruction; however, the command was not recognizable by ACF/VTAM or it was a command (START or HALT) that cannot be sent by the application program.

20 (X‘14’) 114 (X‘72’) TERMSESS invalid

You attempted to issue a TERMSESS macro instruction while acting as the primary end of the session. Only a terminal or logical unit acting as the secondary end may issue a TERMSESS macro instruction.

20 (X‘14’) 115 (X‘73’) REQSESS invalid

You attempted to issue a REQSESS macro instruction but you have specified an invalid parameter.

The FDBK Field

The FDBK field is set when a READ, WRITE, DO, or INQUIRE (OPTCD=APPSTAT) macro instruction is completed successfully.

For READ, WRITE, and DO, any combination of the bits shown below may be set in the FDBK field. Although you can test the FDBK field by coding FDBK=*value* on a TESTCB macro instruction, a simpler method is available: You can code DATAFLG=UNSOL, EOB, EOM, EOT, LG, or SOH on a TESTCB macro instruction. For example:

```
TESTCB      RPL=RPL1,DATAFLG=SOH
```

An equal PSW condition code indicates that the corresponding bit is set on. The following table indicates the appropriate operand for each bit.

You may wish to use SHOWCB to examine the FDBK field. As is true with the RTNCD and FDBK2 fields, SHOWCB places the FDBK field in the right-most byte of your fullword area, and sets the high-order three bytes to zero. Thus for purposes of SHOWCB, the bit positions shown below (0, 1, 2 ... 7) become bit positions 24, 25, 26 ... 31.

For the INQUIRE macro instruction (OPTCD=APPSTAT), one of the values shown below is returned in the FDBK field. You can use either TESTCB or SHOWCB to determine the contents of FDBK. Note that although combinations of *bits* are set for READ, WRITE, and DO, a single numerical *value* is set in FDBK for INQUIRE.

FDBK Codes for READ, WRITE, and DO

Bit Position	TESTCB Operand	Explanation
0: x	DATAFLG=UNSOL	Unsolicited input. For READ (or DO, with CMD=READ), this indicates that the data was not solicited from the terminal by your application program. For WRITE (or DO, with CMD=WRITE LDO), this indicates that data was received instead of an acknowledgment, or that leading graphic characters were received with the acknowledgment.
1: . x	None	Reserved.

Bit Position	TESTCB Operand	Explanation
2: . . x	DATAFLG=EOB	End of block. For a READ or conversational WRITE, this indicates that the input data block ended with an EOB. This bit is not set if overlength data is present (which is possible if the KEEP option code is in effect). This bit is set for the READ that obtains the last portion of the overlength data, however. If this bit is set on, you will probably want to next determine if the EOM indicator is set.
3: . . . x	DATAFLG=EOM	End of message. For a READ or conversational WRITE, this indicates that the input data block ended with an ETX. This bit setting applies only to BSC devices. If this bit is set on, you will probably want to next determine if the EOT indicator is set.
4: . . . . x . . .	DATAFLG=EOT	End of transmission. For a READ or conversational WRITE, this indicates that the last block of a transmission was received. The RPL's RECLEN field must be checked; if it is set to 0, the EOT arrived unaccompanied by data. If RECLEN contains a non-zero value, a block of data (of the length indicated by RECLEN) accompanied by an EOT was received.
5: . . . . . x . .	None	Reserved.
6: . . . . . . x .	DATAFLG=LG	Leading graphic characters received. This bit is set only for READ, and indicates that leading graphic characters have been received (without data). This code is only set on for binary synchronous terminals.
7: x	DATAFLG=SOH	Heading block received. For a READ, this indicates that a heading block was received and placed in your input area. If RTNCD is set to 0 the data block associated with the heading block can be obtained with another READ macro instruction. If RTNCD is set to 12 (decimal), there is no associated data block—that is, the heading block arrived unacompanied by data. This code is only set on for binary synchronous terminals.

FDBK Codes for INQUIRE

FDBK Value (Hexadecimal)	Explanation
0	Application program active. The application program is accepting logons.
4	Application program inactive. The application program has not yet opened its ACB.
8	Application program never accepts. The application program never accepts logons. That is, the application program opened its ACB with MACRF=NLOGON specified.

FDBK Value (Hexadecimal)	Explanation
C	Application program temporarily not accepting. The application program normally accepts logons, but it has indicated that logons are not to be directed at it for the time being. That is, the application program opened its ACB with MACRF=LOGON specified, but has subsequently issued SETLOGON (OPTCD=STOP). Since the use of this type of SETLOGON implies a *temporary* closing of the logon queue, you can periodically reissue INQUIRE to determine when the application program reopens its logon queue. You will know that logons can again be directed at the application program when INQUIRE returns a value of 0 in FDBK.
10	Application program no longer accepting. The application program normally accepts logons, but it has permanently closed its logon queue. That is, it has issued SETLOGON (OPTCD=QUIESCE). No more logons can be directed at the application program. Presumably, it is about to close its ACB.

Return Codes for the LOSTERM Exit Routine

When the LOSTERM exit routine receives control, register 1 contains the address of a 4-word parameter list (see the EXLST macro for the complete contents of the parameter list). The value contained in the fourth word indicates why the LOSTERM exit routine was scheduled:

LOSTERM Code (Decimal)	Meaning
0	A dial-line disconnection occurred for a dial-in BSC or start-stop terminal. A CLSDST macro instruction is required.
4	A dial-line disconnection occurred for a dial-out BSC or start-stop terminal. If no data from the terminal remains in ACF/VTAM buffers, a READ or WRITE (OPTCD=SPEC) macro instruction will redial the terminal. If redialing fails (causing the LOSTERM exit routine to be rescheduled), the CLSDST macro instruction should be issued for the terminal.
8	Reserved.
12	Contact with a terminal or logical unit was permanently lost for the following reasons: (1) The network operator has issued a VARY INACT command for the terminal, or logical unit. (For VARY INACT,F or R, the LOSTERM exit routine is entered twice, once with a return code of 24 and then with a return code of 12.) **Note:** *If the device lost was a PU or a 3705, the VARY INACT,R causes the LOSTERM exit routine to be rescheduled with a code of 16 instead of 12.* (2) The communication controller's NCP has begun an automatic network shutdown or has abended and cannot be restarted. (3) There has been a permanent channel failure between the host computer and the communications controller or locally attached terminal. (4) There has been a failure in the network path between the communications controller and the remotely attached terminal. (5) The network operator has issued a HALT NET,QUICK command. (6) ACF/VTAM has received an RU that exceeds the maximum RU size the logical unit may send. (7) A test request message has been received from the terminal other than a basic mode 3270 (see *ACF/VTAM TOLTEP,* SC38-0283, for more information about test request messages). For logical units, ACF/VTAM automatically issues an Unbind command. For non-SNA terminals, READ macro instructions may be issued to obtain data already sent from the terminal. A CLSDST macro instruction is required unless a CLSDST has already been executed successfully.

FDBK Value (Decimal) **Explanation**

Note: *Losing contact with a logical unit causes the LOSTERM exit routine to be scheduled only if the application program has not defined an NSEXIT exit routine. If defined, the NSEXIT exit routine scheduled.*

16 The logical unit has been successfully recontacted. ACF/VTAM issues an Unbind command for the application program. Issue a CLSDST macro instruction. The application program can issue an OPNDST or SIMLOGON macro instruction to re-acquire the logical unit. If an application program has an NSEXIT exit routine, this condition is not reported to the LOSTERM exit routine, but is reported to the NSEXIT exit routine instead.

Once the CLSDST macro instruction has been issued, reconnection of the logical unit is subject to the normal rules for acquisition. Therefore, if another application program has a connection request queued for the logical unit, or the logical unit has issued a connection request for another application program, the logical unit may not be immediately reconnected to the releasing application program.

20 An unconditional Terminate command or an unconditional character-coded logoff was issued by the logical unit. ACF/VTAM issues an Unbind command for the application program. A CLSDST macro instruction is required.

24 Contact with the logical unit has been lost, but ACF/VTAM may be able to reestablish it. Stop sending to the logical unit and either return control to ACF/VTAM or issue a CLSDST macro instruction. If you do not issue a CLSDST, you must return to ACF/VTAM; ACF/VTAM will attempt to recontact the logical unit. If it is successful, ACF/VTAM reschedules the LOSTERM exit routine with a return code of 16; if it is unsuccessful, the LOSTERM exit routine is rescheduled with a return code of 12. If you issue a CLSDST for the logical unit, the LOSTERM exit routine might not be rescheduled, and you will not get return code 12 or 16. If the application program has an NSEXIT exit routine, this condition is not reported to the LOSTERM exit routine.

28 Reserved.

32 A conditional Terminate command or a conditional character-coded logoff or a conditional TERMSESS macro instruction has been issued by the logical unit. The application program may take any action it desires including issuing a CLSDST for the logical unit.

36 The buffer limit defined for a logical unit has been exceeded. ACF/VTAM issues a Clear command for the application program. Any data for which the application program has not issued a RECEIVE is discarded. The application program may resynchronize sequence numbers, or the data may be retransmitted after issuing SESSIONC (CONTROL=SDT) if appropriate for the transmission services profile specified by the session parameters. (See Appendix J.)

FDBK Value (Decimal)	Explanation
40	The operator at a non-SNA terminal has pressed the Test Request key. A CLSDST macro instruction is required.

Note: *For any LOSTERM return code that requires or recommends a CLSDST macro instruction, do not issue a second CLSDST if one has already been issued to the terminal or logical unit.*

Return Codes for the TPEND Exit Routine

When the TPEND exit routine receives control, register 1 contains the address of a 2-word parameter list. The first word of list contains the address of the ACB of the application program being shut down.

The value in the second word indicates the reason for the shutdown:

0	The network operator issued a standard HALT command to close the network normally.
4	The network operator issued a HALT QUICK command, or ACF/VTAM detected an internal problem and is halting itself.
8	The network operator issued a HALT CANCEL command (OS/VS1 only), or ACF/VTAM has abnormally terminated.

ACB's ERROR Field Set by the OPEN Macro Instruction

The value set in the ERROR field of the ACB specified in the OPEN macro instruction indicates the specific nature of the error (if any) encountered (except where noted, all values apply to both DOS/VS and OS/VS):

ERROR Field Hex	(Dec)	Meaning
0	(0)	OPEN has successfully opened this ACB.
14	(20)	(OS/VS only) OPEN cannot be processed because of a temporary shortage of storage.
24	(36)	The password specified by the ACB does not match the password specified in the corresponding APPL entry, or the ACB does not specify a password and one was specified in the APPL entry.
46	(70)	OPEN was issued in an EXIT routine.
50	(80)	ACF/VTAM has not been included as part of the operating system. The fault lies in the system definition procedures.
52	(82)	ACF/VTAM has been included as part of the operating system, but the network operator has issued a HALT command, and ACF/VTAM is shutting down. You cannot attempt connection or communication with any terminals or logical units.
54	(84)	Either the address supplied in the ACB's APPLID field lies beyond the addressable range of your application program, or no entry could be found in the resource definition table that matches the name indicated by the ACB's APPLID field (or supplied by JCL). If the OPEN macro instruction was specified correctly, your installation may have failed to include your application program's symbolic name during ACF/VTAM definition, or you may have improperly handled the symbolic name. Refer to the description of the APPLID operand in the ACB macro instruction.

ERROR Field		
Hex	(Dec)	Meaning
56	(86)	A match for your application program's symbolic name was found, but it was for an entry other than an APPL entry. If you specified this name in the ACB's APPLID field, verify that the installation has supplied you with the correct name and that you have handled this name properly (see the APPLID operand of the ACB macro instruction). If the symbolic name was supplied via JCL, the job step name, job name, or task ID is suspect.
58	(88)	Another ACB, already opened by ACF/VTAM, indicates the same application program symbolic name that this ACB does. The installation may have assigned the same symbolic name to two application programs. This is valid only if the programs do not run (or are at least not open) concurrently. Possibly the system operator initiated your job or job step at the wrong time.
5A	(90)	No entry could be found in the resource definition table that matches the name indicated by the ACB's APPLID field (or supplied via JCL). This error may have occurred because the installation deactivated the APPL entry or never created it.
5C	(92)	ACF/VTAM has been included as part of the operating system, but is inactive, or (for DOS/VS only) the priority of the application program is greater than ACF/VTAM's priority. ACF/VTAM must have higher priority.
5E	(94)	The address supplied in the ACB's APPLID field lies beyond the addressable range of your application program.
60	(96)	An apparent system error occurred. Either there is a defect in ACF/VTAM's logic, or there is an error in your use of OPEN or CLOSE that ACF/VTAM did not properly detect. Save all applicable program listings and storage dumps, and consult your IBM Programming Services Representative.
62	(98)	The APPLID length indicator byte is incorrectly specified.
64	(100)	The address supplied in the ACB's PASSWD field lies beyond the addressable range of your application program.
66	(102)	The PASSWD length indicator byte is incorrectly specified.
68	(104)	The APPLID field in the ACB identifies an application program that is defined with AUTH=PPO in its APPL statement. Another program with the same authorization is already active. Only one program defined with AUTH=PPO may be active at a time.
70	(112)	(OS/VS only) You attempted to open an ACB that is in the process of being closed. This can occur when an ACF/VTAM application program job step or subtask is canceled or terminates abnormally. The process of closing the ACB may continue after the job step or subtask has actually terminated. Subsequently, if the job step is restarted or the subtask is reattached before the ACB closing process has been completed, an OPEN macro that is then issued for that ACB will fail.
88	(136)	(DOS/VS only) OPEN cannot be processed because of a temporary storage shortage.

ACB's ERROR Field Set by the CLOSE Macro Instruction

The value set in the ERROR field of the ACB specified in the CLOSE macro instruction indicates the specific nature of the error (if any) encountered. All values except 48 apply to both DOS/VS and OS/VS:

ERROR Field		
Hex	**(Dec)**	**Meaning**
0	(0)	CLOSE successfully closed the ACB.
4	(4)	A CLOSE macro instruction has already been successfully issued for this ACB (or the ACB has never been opened in the first place).
40	(64)	Outstanding OPNDST ACQUIREs not released.
42	(66)	The ACB has been closed, but an apparent system error has prevented the successful disconnection of one or more of the terminals connected to the application program. The fault is ACF/VTAM's, and IBM program systems representatives should be consulted. The terminals that could not be disconnected are not available to other application programs, and terminals for which you were requesting connection when CLOSE was executed will likewise be unavailable when they are released to you. You can notify the network operator (during program execution) of the situation so that the operator can make the terminals available to other application programs.
46	(70)	CLOSE was not issued in the main program. OPEN and CLOSE cannot be issued in any exit routine except LERAD or SYNAD.
48	(72)	(OS/VS1 and OS/VS2 SVS only) CLOSE was not issued in a job step task or in a subtask within the ACF/VTAM region.
4C	(76)	This application program is authorized to issue network operator commands and receive ACF/VTAM messages. A CLOSE was issued, but there are unreceived messages still queued for it or ACF/VTAM is waiting for a reply or both. ACF/VTAM considers the application program to be in a quiesced state, and only RCVCMD macro instructions to receive the queued messages or SENDCMD macro instructions containing a REPLY command to send a reply to ACF/VTAM can be issued. Any RCVCMD macro instructions issued while the application program is in this quiesced state will not be queued by ACF/VTAM. Therefore, it is recommended that they be issued with NQ specified for the OPTCD operand and processed immediately. Once a return code indicates that there are no more messages waiting, a second CLOSE should complete normally.
50	(80)	ACF/VTAM is no longer included as part of the operating system.
60	(96)	ACF/VTAM has detected an undefined system error. No further attempts should be made to open or close the ACB.
70	(112)	CLOSE was issued while the program was in the process of terminating abnormally. The CLOSE is not necessary since the ACB will be closed by ACF/VTAM when the task terminates.
BC	(188)	The ACB is in the process of being opened or is in the process of being closed by another CLOSE request.

The SENSE Field (Basic Mode Only)

The SENSE field is set following READ, WRITE, and DO macro instructions when the device returns error status information. The first 2 bytes of the SENSE field contain the BSC status/sense information as received from a 3270 or 3740 terminal.

The sense field can be tested directly with the TESTCB macro instruction, or the field can be extracted with the SHOWCB macro instruction or examined with assembler instructions. SHOWCB requires that you provide a fullword work area in your application program for the SENSE field. The SENSE field contains two meaningful bytes of information; for SHOWCB, this information is right-justified in the fullword work area, and the unused portion is set to 0. The specific bits that are set in the SENSE field are identified and explained in the component description manual for the particular terminal or system. The second half of the SENSE field (the NCP return codes) cannot be examined with SHOWCB or TESTCB macro instructions; the RPL DSECT must be used (see Figure H-9).

The third and fourth bytes of the SENSE field contain the response and extended response bytes (also called NCP return codes) that are forwarded by the NCP for the following terminals:

2770 Data Communication System
2780 Data Transmission Terminal
3270 Information Display System (basic-mode)
3740 Data Entry System
3780 Data Transmission Terminal

For a description of the NCP return codes, consult *IBM 3704 and 3705 Communication Controller Programmer's Reference Handbook,* GY30-3012.

The Logical Unit Sense Fields

When the application program or a logical unit receives a negative response or a Logical Unit Status (LUS) command, the response or command includes information regarding the reason for the exception condition. There are three types of information that describe the exception condition:

System sense information

System sense modifier information

User sense information

System sense information indicates one of five major classes of system-defined error.

System sense modifier information indicates one of many specific causes of the error indicated by the system sense information. Like RTNCD and FDBK2, the system sense and system sense modifier information together form a specific type of error condition within a general class of error conditions. These error conditions are described below and in the RPL DSECT (Figure H-9).

User sense information is used when the error condition is detected by the user-written program itself. No particular codes or values are defined by IBM to indicates types of errors. The node must generate its own user sense information that will be understood by the other node.

These three types of sense information—system, system modifier, and user—are set in RPL fields. Three fields (one for each type of sense information) are set by the application program when it sends a negative response or LUS command to the logical unit. Three other fields are set by ACF/VTAM when the application program receives an exception message, a negative response, or LUS command from the logical unit. These are the names of the six fields, as they would be used on a manipulative or RPL macro instruction:

	Received by the Application Program	**Sent from the Application Program**
System sense information	SSENSEI	SSENSEO
System sense modifier information	SSENSMI	SSENSMO
User sense information	USENSEI	USENSEO

System Sense Information: The values that are set in the system sense field are predefined by IBM. These values are as follows (the operands shown here are those used with a MODCB or TESTCB macro instruction; the corresponding hexadecimal value is also shown in parentheses):

System Sense Values	**Meaning**
SSENSEI=PATH (X'80')	A path error occurred. The message could not be delivered to the intended receiver because of a physical problem in the network path or an error in the system-supplied transmission header that accompanied the message. ACF/VTAM attempts to recover the path; however, if no recovery action is possible, disconnect the logical unit.

SSENSEI=CPM (X'40')
SSENSEO=CPM (X'40')
	An unrecoverable request header error occurred. The sender did not correctly enforce the current session protocols. Disconnect the logical unit.

SSENSEI=STATE (X'20')
SSENSEO=STATE (X'20')
	A state error occurred in the application program's or logical unit's use of sequence numbers, chaining commands, bracket indicators, or change-direction indicators. A state error can also occur when a data flow control command is issued or data is sent after a Clear command or when a session control command is issued before a Clear command. This type of error is recoverable; use Clear, STSN, and SDT commands.

SSENSEI=FI (X'10')
SSENSEO=FO (X'10')
	A request error occurred. The application program or logical unit cannot handle the message because the message itself is invalid. This error may or may not be recoverable.

SSENSEI=RR (X'08')
SSENSEO=RR (X'08')
	A request reject occurred. The message was delivered to the intended receiver; it was correctly interpreted, but it was not handled by the receiver. This is a recoverable condition.

System Sense Modifier Information: The values that are set in the system sense modifier field are also predefined by IBM. For the specified system sense information, the modifiers define the specific type of error that occurred. The values for the system sense modifier field are as follows (the operands shown here are those used with a MODCB or

TESTCB macro instruction; the corresponding hexadecimal value is also shown in parentheses):

When the system sense field is set to:	**The system sense modifier field can be set to:**	**Meaning**
SSENSEI=PATH	SSENSMI=1 (X‘01’)	Intermediate controller failure. A machine or program check has occurred in an intermediate controller in the network. The current request has been discarded, and a response may or may not be possible.
	SSENSMI=2 (X‘02’)	Link failure. The data link has failed.
	SSENSMI=3 (X‘03’)	Logical unit inoperative. The logical unit is unable to process requests.
	SSENSMI=4 (X‘04’)	Unrecognizable DAF. An intermediate controller has no routing information for the destination address field (DAF) associated with the message, or there is no logical unit with the destination address specified.
	SSENSMI=5 (X‘05’)	No session. A session has not been established between the sender and receiver, or an intermediate controller does not have an active program that can establish the connection.
SSENSMI=PATH	SSENSMI=6 (X‘06’)	Invalid FID. The transmission header for the message contains an invalid format identification (FID). This may have resulted from an erroneous ACF/VTAM definition of a logical unit or physical unit.
	SSENSMI=7 (X‘07’)	Segmenting error. Segments have been received out of order (for example, first, last, middle), or segmenting is not supported. If segmenting is not supported, a negative response will be returned for the first segment only; the subsequent segments are discarded.
	SSENSMI=8 (X‘08’)	Physical unit not active. The physical unit with which the logical unit is associated has not been activated, and the current request has not resulted in a command to activate it.
	SSENSMI=9 (X‘09’)	Logical unit not active. The logical unit has not been activated, and the current request has not resulted in a command to activate it.
	SSENSMI=10 (X‘0A’)	Reserved.

When the system sense field is set to:	The system sense modifier field can be set to:	Meaning
	SSENSMI=11 (X'0B')	Incomplete transmission header. The transmission received was shorter than the required length for a transmission header.
	SSENSMI=12 (X'0C')	Invalid data count field. The length specified in the data count field of the transmission header does not match the actual length of the transmission.
	SSENSMI=13 (X'0D')	Lost contact. Contact with the receiving station has been lost; however, the link itself did not fail. If the reason for the loss of contact cannot be determined, it will be treated as a link failure.

SSENSEI=CPM
SSENSEO=CPM
	SSENSMI=1 (X'01')
	SSENSMO=1 (X'01')
		Reserved.

	SSENSMI=2 (X'02')
	SSENSMO=2 (X'02')
		Reserved.

	SSENSMI=3 (X'03')
	SSENSMO=3 (X'03')
		Begin Bracket (BB) not permitted. The Begin Bracket indicator was set in a message that was in a middle or last position in a chain.

SSENSEI=CPM
SSENSEO=CPM
	SSENSMI=4 (X'04')
	SSENSMO=4 (X'04')
		End Bracket (EB) not permitted. The End Bracket indicator was set in a message that was in the middle position or the first position of a multiple message chain or it was set in violation of the protocol in use.

	SSENSMI=5 (X'05')
	SSENSMO=5 (X'05')
		Incomplete request header. The transmission received was shorter than that required for the combined transmission and request headers.

	SSENSMI=6 (X'06') SSENSMI=6 (X'06')	Exception response not permitted. An exception response was requested when not permitted.

	SSENSMI=7 (X'07')
	SSENSMO=7 (X'07')
		Definite response not permitted. A definite response was requested when not permitted.

	SSENSMI=8 (X'08')
	SSENSMO=8 (X'08')
		Pacing not supported. Pacing was requested but the receiver does not support pacing.

	SSENSMI=9 (X'09')
	SSENSMO=9 (X'09')
		Change-direction not permitted. The change-direction indicator was erroneously set.

	SSENSMI=10 (X'0A')
	SSENSMO=10 (X'0A')
		No response not permitted. No response was requested when a response was required.

When the system sense field is set to:	The system sense modifier field can be set to:	Meaning

	SSENSMI=11 (X‘0B’)
	SSENSMO=11 (X‘0B’)
		Chaining invalid. Chaining has been requested when it is invalid in the current session.

	SSENSMI=12 (X‘0C’)
	SSENSMO=12 (X‘0C’)
		Bracket protocol invalid. Bracket protocol has been requested when it is invalid in the current session.

	SSENSMI=13 (X‘0D’)
	SSENSMO=13 (X‘0D’)
		Change-direction invalid. Change-direction has been requested when it is not supported in the current session.

	SSENSMI=14 (X‘0E’)
	SSENSMO=14 (X‘0E’)
		Sense data included not permitted. Sense data has been requested when it is not permitted in the current session.

	SSENSMI=15 (X‘0F’)
	SSENSMO=15 (X‘0F’)
		Format indicator not permitted. The format indicator was set when it is invalid in the current session.

	SSENSMI=16 (X‘10’)
	SSENSMO=16 (X‘10’)
		Alternate code not permitted. The alternate code indicator was set when it is invalid in the current session.

SSENSEI=STATE
SSENSEO=STATE
	SSENSMI=1 (X‘01’)
	SSENSMO=1 (X‘01’)
		Invalid sequence number. The sequence number received with a normal flow request was not one greater than the sequence number of the previous request.

SSENSEI=STATE
SSENSEO=STATE
	SSENSMI=2 (X‘02’)
	SSENSMO=2 (X‘02’)
		Chaining error. Parts of the chain were received out of sequence (for example, first, middle, first).

	SSENSMI=3 (X‘03’)
	SSENSMO=3 (X‘03’)
		Bracket error. The sender did not enforce bracket protocol correctly. This does not include contention or race errors.

	SSENSMI=4 (X‘04’)
	SSENSMO=4 (X‘04’)
		Change-direction error. A message was received before the receiver authorized a change of direction.

	SSENSMI=5 (X‘05’)
	SSENSMO=5 (X‘05’)
		Data traffic reset state. Data or a data flow control command received after a Clear command had been issued.

	SSENSMI=6 (X‘06’)
	SSENSMO=6 (X‘06’)
		Data traffic quiesced. Data or a data flow control command was received from a logical unit which had already sent a Quiesce or Shutdown Complete (QC or SHUTC) or has not yet responded with a Release Quiesce (RELQ).

	SSENSMI=7 (X‘07’)
	SSENSMO=7 (X‘07’)
		Data traffic not reset. A session control command was received and a Clear command had not been issued previously.

When the system sense field is set to:	The system sense modifier field can be set to:	Meaning

	SSENSMI=9 (X‘09’)
	SSENSMO=9 (X‘09’)
		SNA cryptographic protocol violation. Enciphered data was received from the logical unit before the cryptographic session was completely established.

SSENSEI=FI
SSENSEO=FI
	SSENSMI=1 (X‘01’)
	SSENSMO=1 (X‘01’)
		Message data error. User data in the message is not acceptable to the receiver. For example, it contains an unsupported character code or it contains a formatted field that is not acceptable. If this error occurs on a cryptographic session, an invalid pad count byte may have been received. Any value outside the range of 1 to 7 is invalid.

	SSENSMI=2 (X‘02’)
	SSENSMO=2 (X‘02’)
		Message length error. The message was too long or too short.

	SSENSMI=3 (X‘03’)
	SSENSMO=3 (X‘03’)
		Function not supported. The function requested is not supported by the receiver. The function may have been requested by a formatted request code, a field in a message, or a control character.

SSENSEI=FI
SSENSEO=FI
	SSENSMI=4 (X‘04’)
	SSENSMO=4 (X‘04’)
		Reserved.

	SSENSMI=5 (X‘05’)
	SSENSMO=5 (X‘05’)
		Parameter error. A parameter is invalid or not supported by the receiver.

	SSENSMI=6 (X‘06’)
	SSENSMO=6 (X‘06’)
		Reserved.

	SSENSMI=7 (X‘07’)
	SSENSMO=7 (X‘07’)
		Category not supported. The network control commands sent are not supported by the receiver.

	SSENSMI=8 (X‘08’)
	SSENSMO=8 (X‘08’)
		Invalid function management header. The function management header is not understood or translatable by the receiver, or an expected function management header is not present.

SSENSEI=RR
SSENSEO=RR
	SSENSMI=1 (X‘01’)
	SSENSMO=1 (X‘01’)
		No SSCP-to-resource path. The requested logical unit, physical unit or link does not have an active session with SSCP. The logical unit may not have been activated, or the application program may not have issued an OPEN ACB.

When the system sense field is set to:	The system sense modifier field can be set to:	Meaning

	SSENSMI=2 (X‘02’)
	SSENSMO=2 (X‘02’)
		Operator intervention required. Operator intervention is required for example, forms or cards are required at an output device, or the device may be temporarily in local mode).

	SSENSMI=3 (X‘03’)
	SSENSMO=3 (X‘03’)
		Missing password. The required password is missing.

	SSENSMI=4 (X‘04’)
	SSENSMO=4 (X‘04’)
		Invalid password. The password is invalid.

	SSENSMI=5 (X‘05’)
	SSENSMO=5 (X‘05’)
		Session limit exceeded. The session requested cannot be established because an intermediate controller or logical unit is already operating at capacity.

	SSENSMI=6 (X‘06’)
	SSENSMO=6 (X‘06’)
		Resource unknown. The logical unit, physical unit, or link name specified in a request is not known to the receiver.

	SSENSMI=7 (X‘07’)
	SSENSMO=7 (X‘07’)
		Resource not available. The requested logical unit, physical unit, or link is not available.

SSENSEI=RR
SSENSEO=RR
	SSENSMI=8 (X‘08’)
	SSENSMO=8 (X‘08’)
		Invalid Contents ID. The contents identification contained in a cross-domain request was found to be invalid. The contents ID is an 8-character symbolic name for a cross-domain resource manager.

	SSENSMI=9 (X‘09’)
	SSENSMO=9 (X‘09’)
		Mode inconsistancy. The requested receiver is not in the appropriate mode.

	SSENSMI=10 (X‘0A’)
	SSENSMO=10 (X‘0A’)
		Permission rejected. The receiver has denied an explicit or implicit request of the sender.

	SSENSMI=11 (X‘0B’)
	SSENSMO=11 (X‘0B’)
		Bracket race error. A recoverable, apparent violation of bracket protocol has occurred; this can arise when both the sender and reciever are permitted to initiate and terminate brackets.

	SSENSMI=12 (X‘0C’)
	SSENSMO=12 (X‘0C’)
		Procedure not supported. A procedure named in a message is not supported by the receiver.

	SSENSMI=13 (X‘0D’)
	SSENSMO=13 (X‘0D’)
		NAU contention. Two network addressable units are in contention for the request issued. Some form of contention is necessary.

When the system sense field is set to:	The system sense modifier field can be set to:	Meaning

	SSENSMI=14 (X‘0E’)
	SSENSMO=14 (X‘0E’)
		Logical unit not authorized. The requesting logical unit is not authorized to use the requested resource.

	SSENSMI=15 (X‘0F’)
	SSENSMO=15 (X‘0F’)
		End user not authorized. The requesting end user is not authorized to use the requested resource.

	SSENSMI=16 (X‘10’)
	SSENSMO=16 (X‘10’)
		Missing requester identification. A required requester identification was missing in the current request.

	SSENSMI=17 (X‘11’)
	SSENSMO=17 (X‘11’)
		Break. The sender is asking the receiver to terminate the current chain with a Cancel command or a Last in Chain indicator.

	SSENSMI=18 (X‘12’)
	SSENSMO=18 (X‘12’)
		Insufficient resource. The receiver cannot act upon a request because of a temporary lack of resources.

	SSENSMI=19 (X‘13’)
	SSENSMO=19 (X‘13’)
		Bracket bid reject - no RTR. A Bid or Begin Bracket indicator been received, and the request has been rejected; a Ready to Receive (RTR) command will not be sent.

SSENSEI=RR
SSENSEO=RR
	SSENSMI=20 (X‘14’)
	SSENSMO=20 (X‘14’)
		Bracket bid reject - RTR. A Bid or Begin Bracket indicator has been received and the request has been rejected; however a Ready to Receive (RTR) command will be sent.

	SSENSMI=21 (X‘15’)
	SSENSMO=21 (X‘15’)
		Function active. A request to activate a network element or procedure has been received, but the element or procedure is already active.

	SSENSMI=22 (X‘16’)
	SSENSMO=22 (X’16’)
		Function inactive. A request to deactivate a network element or procedure has been received, but the element or procedure was not active.

	SSENSMI=23 (X‘17’)
	SSENSMO=23 (X‘17’)
		Link inactive. A request requires the use of a link, but that link is inactive.

	SSENSMI=24 (X‘18’)
	SSENSMO=24 (X‘18’)
		Link procedure in progress. Contact, discontact, IPL, or another link procedure was in progress when the current conflicting request was received.

	SSENSMI=25 (X‘19’)
	SSENSMO=25 (X‘19’)
		RTR not required. The receiver of a Ready to Receive (RTR) command has nothing to send.

	SSENSMI=26 (X‘1A’)
	SSENSMO=26 (X‘1A’)
		Sequence of requests invalid. An invalid sequence of requests has been received.

When the system sense field is set to:	The system sense modifier field can be set to:	Meaning

	SSENSMI=27 (X‘1B’)
	SSENSMO=27 (X‘1B’)
		Receiver in transmit mode. The receiver cannot accept the current request because the receiver is in the half-duplex contention transmit mode.

	SSENSMI=28 (X‘1C’)
	SSENSMO=28 (X‘1C’)
		Request not executable. The requested function could not be executed because the receiver is in a permanent error condition.

	SSENSMI=29 (X‘1D’)
	SSENSMO=29 (X‘1D’)
		Invalid station or SSCP identification. The station or SSCP identification in the request was found to be invalid.

	SSENSMI=30 (X‘1E’)
	SSENSMO=30 (X‘1E’)
		Session reference error. The request referred to a half session that was neither active nor in the process of being activated. (This error generally applies to network services commands).

	SSENSMI=31 (X‘1F’)
	SSENSMO=31 (X‘1F’)
		Reserved.

SSENSEI=RR
SSENSEO=RR
	SSENSMI=32 (X‘20’)
	SSENSMO=32 (X‘20’)
		Control vector error. Invalid data found for the control vector specified by the target network address and key.

	SSENSMI=33 (X‘21’)
	SSENSMO=33 (X‘21’)
		Invalid session parameters. Session parameters are not valid or not supported by a network addressable unit for which the session is requested.

	SSENSMI=36 (X‘24’)
	SSENSMO=36 (X‘24’)
		Component terminated. The device indicated by the function management header has had its session terminated because of an error condition or resource depletion.

	SSENSMI=37 (X‘25’)
	SSENSMO=37 (X‘25’)
		Component not available. The device indicated by the function management header is not available.

	SSENSMI=38 (X‘26’)
	SSENSMO=38 (X‘26’)
		Function not supported. A function requested in a function management data request unit is not supported by the receiver.

	SSENSMI=39 (X‘27’)
	SSENSMO=39 (X‘27’)
		Intermittant error, retry requested.

	SSENSMI=40 (X‘28’)
	SSENSMO=40 (X‘28’)
		Reply not allowed. A request requires a normal-flow reply, but the outbound data flow for this logical unit is quiesced or shut down, and there is no delayed reply capability.

When the system sense field is set to:	The system sense modifier field can be set to:	Meaning

	SSENSMI=41 (X'29')
	SSENSMO=41 (X'29')
		Change in direction required. A reply has been requested, but no Change Direction indicator was sent with the request.

	SSENSMI=42 (X'2A')
	SSENSMO=42 (X'2A')
		Presentation space altered at the secondary logical unit.

	SSENSMI=43 (X'2B')
	SSENSMO=43 (X'2B')
		Presentation space error, not caused by the operator.

	SSENSMI=44 (X'2C')
	SSENSMO=44 (X'2C')
		Resource-sharing limit exceeded. An SSCP request to start a session was received, but the requested logical unit was already at its sharing limit.

	SSENSMI=45 (X'2D')
	SSENSMO=45 (X'2D')
		Secondary logical unit busy. The secondary logical unit is processing a request and is unable to accept another request at this time.

	SSENSMI=46 (X'2E')
	SSENSMO=46 (X'2E')
		Intervention required at a subsidiary device. Operator intervention is required by a device connected to the requested logical unit.

SSENSEI=RR
SSENSEO=RR
	SSENSMI=47 (X'2F')
	SSENSMO=47 (X'2F')
		Request not executable at a subsidiary device. The requested function cannot be executed because of a permanent error condition in one or more of the receivers subsidiary devices.

	SSENSMI=48 (X'30')
	SSENSMO=48 (X'30')
		Reserved.

	SSENSMI=49 (X'31')
	SSENSMO=49 (X'31')
		Power off physical unit. The requested logical unit's physical unit is powered off.

	SSENSMI=50 (X'32')
	SSENSMO=50 (X'32')
		Invalid count field. A count field contained in the request indicates a value too long or too short to be interpreted by the receiver, or the count field is inconsistent with the length of the remaining fields. Bytes 2 and 3 following the sense code are not used for user-defined data; they contain a binary count that indexes (zero-origin) the first byte of the invalid count field.

When the system sense field is set to:	The system sense modifier field can be set to:	Meaning

	SSENSMI=51 (X'33')
	SSENSMO=51 (X'33')
		Invalid parameter in fixed-length field. One or more parameters contained in fixed-length fields of the request are invalid or not supported by the NAU that received the request. Bytes 2 and 3 following the sense code are not used for user-defined data. Byte 2 contains a binary value that indexes (zero-origin) the first byte that contained an invalid parameter. Byte 3 contains a transformation of the first byte that contained an invalid parameter: the bits that constitute the invalid parameter(s) are complemented, and all other bits are copied.

	SSENSMI=53 (X'35')
	SSENSMO=53 (X'35')
		Invalid parameter in fixed- or variable-length field. The request contained a fixed- or variable-length field whose contents are invalid or not supported by the NAU that received the request. Bytes 2 and 3 following the sense code are not used for user-defined data; they contain a binary count that indexes (zero-origin) the first byte of the fixed- or variable-length field having invalid contents.

SSENSEI=RR
SSENSEO=RR
	SSENSMI=57 (X'39')
	SSENSMO=57 (X'39')
		Resource not accepting logons. The logical unit is not accepting any more logons because it is being deactivated or is in the process of deactivating itself. The application program may have issued SETLOGON with OPTCD=QUIESCE.

	SSENSMI=58 (X'3A')
	SSENSMO=58 (X'3A')
		Resource not able to accept logons. The logical unit is not accepting logons because it is not enabled to establish a session unless the logical unit itself initiates the connection. The application program may have opened its ACB with MACRF=NLOGON.

	SSENSMI=59 (X'3B')
	SSENSMO=59 (X'3B')
		Invalid programmable controller ID. The PCID in a cross-domain request is invalid.

	SSENSMI=65 (X'41')
	SSENSMO=65 (X'41')
		Duplicate addresses. In a cross-domain connection request, duplicate addresses were detected. The connection was not established.

When the system sense field is set to:	The system sense modifier can be set to:	Meaning

	SSENSMI=66 (X'42')
	SSENSMO=66 (X'42')
		CDRM-CDRM session does not exist. A cross-domain request requiring communication between cross-domain resource managers failed because there is no active CDRM-to-CDRM session.

	SSENSMI=72 (X'48')
	SSENSMO=72 (X'48')
		Encrypt/Decrypt Feature failure. ACF/VTAM has detected an internal failure within the Encrypt/Decrypt Feature. The session is terminated.

User Sense Information: The values that are set in the user sense field are defined by the logic in the application program and in the customer-coded portion of the logical unit, not by IBM. The user sense field may be used to inform the application program or logical unit that an exception condition is not being raised by a SNA-defined error but because of an application program-related error or it can be used to further modify the system sense and system sense modifier values. For function management header errors (SSENSEI or SSENSEO=FI and SSENSMI or SSENSMO='08'), the user sense field may contain SNA-defined sense values.

Note: *The BSC and locally attached 3270s employ the USENSEI field to report status and sense information when an exception request or response is received. For details, refer to "BSC and Local Non-SNA IBM 3270 Information Display System (Record Mode)" in Appendix I.*

When the system sense field is set to:	And the system sense modifier is set to:	The user sense field may be set to:	Meaning

SSENSEI=FI
SSENSEO=FI
	SSENSMI=8 (X'08')
	SSENSMO=8 (X'08')
		USENSEI=X'4001'
		USENSEO=X'4001'
			Invalid function management header type.

		USENSEI=X'4002'
		USENSEO=X'4002'
			Invalid function management header function.

		USENSEI=X'4003'
		USENSEO=X'4003'
			Compression not supported.

		USENSEI=X'4004'
		USENSEO=X'4004'
			Compaction not supported.

		USENSEI=X'4005'
		USENSEO=X'4005'
			Basic exchange not supported.

		USENSEI=X'4006'
		USENSEO=X'4006'
			Only basic exchange is supported.

		USENSEI=X'4007'
		USENSEO=X'4007'
			Media not supported.

		USENSEI=X'4008'
		USENSEO=X'4008'
			Code selection compression violation.

When the system sense field is set to:	And the system sense modifier is set to:	The user sense field may be set to:	Meaning

SSENSEI=FI
SSENSEO=FI
	SSENSMI=8 (X‘08’)
	SSENSMO=8 (X‘08’)
		USENSEI=X‘4009’
		USENSEO=X‘4009’
			Function management header C not supported.

		USENSEI=X‘400A’
		USENSEO=X‘400A’
			Demand select not supported.

		USENSEI=X‘400B’
		USENSEO=X‘400B’
			DSNAME not supported.

		USENSEI=X‘400C’
		USENSEO=X‘400C’
			Invalid media subaddress field.

		USENSEI=X‘2001’
		USENSEO=X‘2001’
			Invalid destination - active.

		USENSEI=X‘2002’
		USENSEO=X‘2002’
			Invalid destination - inactive.

		USENSEI=X‘2003’
		USENSEO=X‘2003’
			Invalid destination - suspended.

		USENSEI=X‘2004’
		USENSEO=X‘2004’
			Invalid suspend resume sequence.

		USENSEI=X‘2005’
		USENSEO=X‘2005’
			Interruption level violation.

		USENSEI=X‘2006’
		USENSEO=X‘2006’
			Invalid resume priorities.

		USENSEI=X‘2007’
		USENSEO=X‘2007’
			Destination not available.

		USENSEI=X‘2008’
		USENSEO=X‘2008’
			Invalid end sequence.

		USENSEI=X‘2009’
		USENSEO=X‘2009’
			Invalid function management header length.

		USENSEI=X‘200A’
		USENSEO=X‘200A’
			Invalid field setting.

		USENSEI=X‘200B’
		USENSEO=X‘200B’
			Invalid destination.

		USENSEI=X‘200C’
		USENSEO=X‘200C’
			Invalid ERCL.

		USENSEI=X‘200D’
		USENSEO=X‘200D’
			Invalid DST.

		USENSEI=X‘200E’
		USENSEO=X‘200E’
			Invalid concatenation.

		USENSEI=X‘2010’
		USENSEO=X‘2010’
			Bind function management header subset violation.

		USENSEI=X‘0801’
		USENSEO=X‘0801’
			Invalid function code parameters.

When the system sense field is set to:	And the system sense modifier is set to:	The user sense field may be set to:	Meaning

SSENSEI=FI
SSENSEO=FI
	SSENSMI=8 (X‘08’)
	SSENSMO=8 (X‘08’)
		USENSEI=X‘0803’
		USENSEO=X‘0803’
			Forms function cannot be performed.

		USENSEI=X‘0805’
		USENSEO=X‘0805’
			Copy function cannot be performed.

		USENSEI=X‘0806’
		USENSEO=X‘0806’
			Compaction table outside supported subset.

		USENSEI=X‘0807’
		USENSEO=X‘0807’
			Invalid PDIR identifier.

		USENSEI=X‘0808’
		USENSEO=X‘0808’
			Train function cannot be performed.

		USENSEI=X‘0809’
		USENSEO=X‘0809’
			FCB load function cannot be performed.

		USENSEI=X‘080A’
		USENSEO=X‘080A’
			FCB load function not supported.

		USENSEI=X‘080B’
		USENSEO=X‘080B’
			Invalid compaction table name.

		USENSEI=X‘080C’
		USENSEO=X‘080C’
			Invalid access.

		USENSEI=X‘080D’
		USENSEO=X‘080D’
			Invalid RECLEN.

		USENSEI=X‘080E’
		USENSEO=X‘080E’
			Invalid NUMRECS.

		USENSEI=X‘080F’
		USENSEO=X‘080F’
			Data set in use.

		USENSEI=X‘0810’
		USENSEO=X‘0810’
			Data set not found.

		USENSEI=X‘0811’
		USENSEO=X‘0811’
			Invalid password.

		USENSEI=X‘0812’
		USENSEO=X‘0812’
			Function not allowed for data set.

		USENSEI=X‘0813’
		USENSEO=X‘0813’
			Record too long.

		USENSEI=X‘0814’
		USENSEO=X‘0814’
			Data set full.

		USENSEI=X‘0815’
		USENSEO=X‘0815’
			Invalid RECID.

		USENSEI=X‘0817’
		USENSEO=X‘0817’
			Invalid VOLID format.

		USENSEI=X‘0818’
		USENSEO=X‘0818’
			Number of logical units per chain exceeded.

		USENSEI=X‘0819’
		USENSEO=X‘0819’
			Data set exists.

When the system sense field is set to:	And the system sense modifier is set to:	The user sense field may be set to:	Meaning

		USENSEI=X‘081A’
		USENSEO=X‘081A’
			No space available.

		USENSEI=X‘081B’
		USENSEO=X‘081B’
			Invalid VOLID.

		USENSEI=X‘081C’
		USENSEO=X‘081C’
			Invalid DSACCESS.

		USENSEI=X‘081D’
		USENSEO=X‘081D’
			Invalid REX type.

		USENSEI=X‘081E’
		USENSEO=X‘081E’
			Insufficient resolution space.

		USENSEI=X‘081F’
		USENSEO=X‘081F’
			Invalid key technique.

		USENSEI=X‘0820’
		USENSEO=X‘0820’
			Invalid key displacement.

		USENSEI=X‘0821’
		USENSEO=X‘0821’
			Invalid key.

		USENSEI=X‘0822’
		USENSEO=X‘0822’
			Invalid N.

		USENSEI=X‘0823’
		USENSEO=X‘0823’
			Invalid KEYIND.

		USENSEI=X‘0824’
		USENSEO=X‘0824’
			Invalid SERID.

Appendix D. Return Codes for Manipulative Macro Instructions

When the application program receives control from any of the manipulative macro instructions (GENCB, MODCB, TESTCB, or SHOWCB), register 15 is set to one of the values shown below.

0 The macro instruction was completed successfully.

If the macro instruction is GENCB, and the control block (or blocks) have been built in dynamically allocated storage, register 1 contains the address of the control blocks and register 0 contains their total length (in bytes).

4 An error occurred. A return code is placed in register 0 indicating the cause of the error (see Figure D-1).

8 An error occurred. Specifically, an attempt has been made to use the execute form of the macro instruction to enter a new item in the parameter list. (Only modifications to existing parameters lists are allowed, as explained in Appendix F.) Register 0 is not set.

12 A DOS/VS system control error occurred. These errors involve the READ and SIZE operands of the EXEC statement used to initiate the application program (the EXEC statement is described in *DOS/VS System Control Statements,* GC33-5376). A return code indicating the cause of the error is placed in register 0 (see Figure D-2).

When a return code of 4 or 12 is placed in register 15, an error return code is placed in register 0. Figures D-1 and D-2 explain these error return codes, and indicates which manipulative macro instructions are capable of returning each code.

	Applicable Macro Instructions				
Value	GENCB	MODCB	SHOWCB	TESTCB	Explanation
1	X	X	X	X	Invalid request type. When the access method processed the execute form, it found that the part of the parameter list that indicates the type of request (MODCB, SHOWCB, TESTCB, or GENCB) had been destroyed.
2	X	X	X	X	Invalid block type. You modified the list form's parameter list. When the access method processed the execute form, it found that the part of the parameter list which indicates the type of control block (ACB, EXLST, RPL, or NIB) had been destroyed.
3	X	X	X	X	Invalid keyword. You modified the list form's parameter list. When the access method processed the execute form, it found that part of the parameter list representing keyword types (FIELDS=, ERET=, etc.) had been destroyed.
4	X	X	X	X	Invalid block. The address specified with the ACB, EXLST, RPL, or NIB keyword did not indicate a valid ACB, EXLST, RPL, or NIB control block, respectively.
5			X	X	Reserved (VSAM only)
6			X	X	Reserved (VSAM only)
7		X	X		Field nonexistent. You attempted to modify or extract a field from an exit list, but the specified field does not exist. For example, you may have specified MODCB EXLST=EXLST1,LERAD=LERADPGM in order to place a valid address (LERADPGM) in EXLST1's LERAD field. The receipt of this return code means that EXLST1 has no LERAD field; you never specified one on an EXLST or GENCB macro instruction.
8	X				Insufficient main storage. There is not enough main storage in which to build the control block or blocks.
9	X		X		Insufficient program storage. The work area length you indicated with the LENGTH operand was not large enough to build the control blocks (GENCB) or to hold the control block fields (SHOWCB).
10	X	X			No address supplied (GENCB,MODCB). You attempted to generate an EXLST entry without specifying an address. For example, coding TPEND= is invalid.
11		X			RPL active. You attempted to modify an RPL that was active (it must be inactive).
12		X			ACB open. You attempted to modify an ACB after it had been opened (the ACB must not be opened when you modify it).
13		X			Reserved (VSAM only)
14	X	X		X	Invalid parameter list. You modified the list form's parameter list. When the access method processed the execute form, it found that the parameter list now indicates mutually exclusive keywords (as though you had, for example, specified BLK=RPL,ECB=ECB1,EXIT=PGM on a GENCB macro instruction).
15	X		X		Invalid alignment. The work area in your application program does not begin on a fullword boundary.
16	X	X	X	X	Invalid control block (access method invalid). You coded AM=VTAM on the macro instruction and included one or more parameters that are valid only for VSAM.
17				X	No internal ECB. TESTCB (IO=COMPLETE) failed because there is no internal ECB in the RPL.

Figure D-1. Register 0 Return Codes for Manipulative Macros When Register 15 Is Set to 4

	Applicable Macro Instructions				
Value	GENCB	MODCB	SHOWCB	TESTCB	Explanation
4	X	X	X	X	DOS/VS system control error. The SIZE operand was omitted from the application program's EXEC statement.
8	X	X	X	X	DOS/VS system. An attempt was made to run in real mode.
12	X	X	X	X	DOS/VS system control error. The value of the SIZE operand does not allow enough space for ACF/VTAM modules. The SIZE specified should be 4K larger than the size required by ACF/VTAM.

Figure D-2. Register 0 Return Codes for Manipulative Macros When Register 15 Is Set to 12 (DOS/VS Only)

Appendix E. Summary of Operand Specifications for the Manipulative Macro Instructions

The first figure in the appendix (Figure E-1) deals with all of the operands of the manipulative macro instructions (GENCB, MODCB, SHOWCB, and TESTCB) that do not involve a particular control block field. The remaining figures deal exclusively with the operands you use to select the control block field or fields to be set, moved, or tested. These figures indicate which manipulative macro instructions apply for each operand and the types of values that can be coded with each operand.

For example, suppose you are interested in examining an ACB's OFLAGS field. Turning to Figure E-2, you locate the OFLAGS entry and note that TESTCB (but not SHOWCB) can be used to examine this field. Checking the OFLAGS entry further, you will note that this operand is coded in a fixed form–in this case, OFLAGS=OPEN.

The "Notation Category" and "Example" columns in Figures E-2 through E-5 do not apply to the SHOWCB macro instruction, where the control block field name is always coded after the FIELDS keyword (for example, FIELDS=PASSWD).

There are many different ways that a given operand might be coded, but the number of valid combinations is small. The valid coding combinations for each operand have been grouped under the heading "Notation Category" in Figures E-1 through E-5. Three of these categories, called the *address, quantity*, and *fixed value* categories, encompass almost all of the operands. A few operands fall into categories identified as the *name, register-indirect value* and *indirect value* categories. These notation categories are to be interpreted as follows:

Address

You can code any of the following expressions after the keyword and equal sign:

- Any expression that is valid for an A-type address constant. For example:

```
          MODCB      ACB=ACB1,APPLID=NAME1,AM=VTAM
          .
          .
          .
NAME1     DC         X‘07’
          DC         CL7‘INQUIRY’
```

- A register number or the label of an EQU instruction for the register, enclosed in parentheses. For example:

```
          L          3,ADRNAME
          MODCB      ACB=ACB1,APPLID=(3),AM=VTAM
          .
          .
          .
ADRNAME   DC         A(NAME1)
```

  Note: *This form is prohibited if you are using the "simple" list form of the macro instruction (MF=L). List forms are explained in Appendix F.*

- An expression of the form (S,*expr*) where *expr* is any expression valid for an S-type address constant. This form of operand is especially useful for gaining access to a control block field via a DSECT. For example, the program has already used GENCB to build an ACB in dynamically allocated storage and has placed the address of the ACB in register 7. A temporary work area MYACB contains the information that is to be placed into the ACB pointed to by register 7. The DSECT ACBMAP is used to access the information in MYACB:

```
                   LA           5,MYACB
                   USING        ACBMAP,5
                   MODCB        ACB=(7),APPLID=(S,APPL1),AM=VTAM
                   .
                   .
                   .
         MYACB     DS           CL52
         ACBMAP    DSECT
                   DS           CL48
         APPL1     DS           CL4
                   END
```

Note: *This form is prohibited if you are using the "simple" list form of the macro instruction (MF=L).*

- An expression of the form (*,*expr*) where *expr* is any expression valid for an S-type address constant. The address specified by *expr* is indirect; that is, it is the address of a fullword that contains the operand. For example, the program has determined which APPLID address is to be used, and has primed register 5 with the appropriate displacement into APPLIST:

```
                   L            7,APPLIST(5)
                   MODCB        ACB=ACB1,APPLID=(*,0(7)),AM=VTAM
                   .
                   .
                   .
         APPLIST   EQU          *
                   DC           A(APPL1)
                   DC           A(APPL2)
```

Quantity

You can code any of the following expressions after the keyword and equal sign:

- A decimal number, or an expression that you have equated to a decimal number. For example:

```
                   TESTCB       ACB=ACB1,ERROR=13,AM=VTAM
```

- A register number, or the label of an EQU instruction for the register number, enclosed in parentheses. For example:

```
                   L            5,TESTVAL
                   TESTCB       ACB=ACB1,ERROR=(5)
                   .
                   .
                   .
         TESTVAL   DS           F       (TESTVAL SET DURING PROGRAM
                                        EXECUTION)
```

Note: *This form is prohibited if you are using the "simple" list form of the macro instruction (MF=L).*

- An expression of the form (S,*expr*) where *expr* is any expression valid for an S-type address constant. This form is especially useful for gaining access to a control block field via a DSECT. For example, the program has already used GENCB to build an ACB in dynamically allocated storage, and has placed the address of the ACB in register 7. A temporary work area MYACB contains the information to which the contents of the ERROR field in the ACB pointed to by register 7 are to be compared. The DSECT ACBMAP is used to access the information in MYACB.

```
          LA        5,MYACB
          USING     ACBMAP,5
          TESTCB    ACB=(7),ERROR=(S,ERR1),AM=VTAM
          .
          .
          .
MYACB     DS        CL52
ACBMAP    DSECT
          DS        CL30
ERR1      DS        CL1
          DS        CL21
          END
```

Note: *This form is prohibited if you are using the "simple" list form of the macro instruction (MF=L).*

- An expression of the form (*,*expr*) where *expr* is any expression valid for an S-type address constant. The address specified by *expr* is indirect; that is, it is the address of a fullword that contains the quantity for the operand. For example, the program has determined which ERROR value is to be tested and has primed register 5 with the appropriate displacement into ERRORLST:

```
          TESTCB    ACB=ACB1,ERROR=(*,ERLST(5))
                    ,AM=VTAM
          .
          .
          .
ERLST     EQU       *
BADNAME   DC        F‘90’
BADPSWD   DC        F‘152’
```

Fixed Value

You can code only the expressions that are specified in the macro instruction descriptions. For example:

```
          GENCB     BLK=ACB,MACRF=NLOGON,AM=VTAM
```

Name

You can code any of the following expressions:

- One to eight EBCDIC characters. For example:

```
          TESTCB    NIB=NIB1,NAME=TERM0003,AM=VTAM
```

- An expression of the form (*,*expr*) as explained above. The address specified by *expr* is indirect; that is, it is the address of a doubleword containing the name. The name must be left-justified and padded to the right with blanks if it does not occupy the entire doubleword. For example:

```
          L         7,NAMEPOOL
          ST        7,NEWNAME+4
          MODCB     NIB=NIB1,NAME=(*,NEWNAME),AM=VTAM
          .
          .
          .
NEWNAME   DC        CL8‘TERM’
NAMEPOOL  DC        CL4‘0001’
```

Register-Indirect Value

You can code any of the following expressions:

- A register number or label of an EQU instruction for the register number, enclosed in parentheses. For example:

```
          MODCB     RPL=RPL1,ARG=(REG5)
          .
          .
          .
REG5      EQU       5
```

Note: *This form is prohibited if you are using the "simple" list form of the macro instruction (MF=L).*

- An expression of the form (*,*expr*) as explained above. The address specified by *expr* is indirect; that is, it is the address of a fullword that contains the value. For example:

```
          MODCB       RPL=RPL1,ARG=(*,NEWCID),AM=VTAM
           .
           .
           .
NEWCID    DS          F    (NEWCID SET DURING PROGRAM EXECUTION)
```

Indirect Value

You can code only the following expression:

- An expression of the form (*,*expr*) as explained above. The address specified by *expr* is indirect; that is, it is the address of a fullword that contains the value. For example:

```
          TESTCB      NIB=NIB1,DEVCHAR=(*,DEVMASK)
                      ,AM=VTAM
           .
           .
           .
DEVMASK   DS          D    (DEVMASK SET DURING PROGRAM EXECUTION)
```

Operand Keyword	Valid for				Notation Category	Example
	GENCB	MODCB	SHOWCB	TESTCB		
ACB		X	X	X	Address	ACB=ACB1
AM	X	X	X	X	Fixed Value	AM=VTAM
AREA			X		Address	AREA=WORKAREA
BLK	X				Fixed Value	BLK=RPL
COPIES	X				Quantity	COPIES=7
ERET				X	Address	ERET=ERRPGM
EXLST		X	X	X	Address	EXLST=EXLST1
FIELDS			X		Fixed Value	FIELDS=(ARG,ECB)
LENGTH	X		X		Quantity	LENGTH=132
MF	X	X	X	X	See Appendix F	MF=(E,PARMLIST)
NIB		X	X	X	Address	NIB=NIB1
RPL		X	X	X	Address	RPL=RPL1
WAREA	X				Address	WAREA=WORKAREA

Figure E-1. Manipulative Macro Instruction Operands Exclusive of Control Block Field Operands

Operand Keyword	Valid for				Notation Category	Example
	GENCB	MODCB	SHOWCB	TESTCB		
ACBLEN			X	X	Quantity	ACBLEN=(7)
AM	X				Fixed Value	AM=VTAM
APPLID	X	X	X	X	Address	APPLID=AREA
ERROR			X	X	Quantity	ERROR=13
EXLST	X	X	X	X	Address	EXLST=EXLST2
MACRF	X	X		X	Fixed Value	MACRF=LOGON
OFLAGS				X	Fixed Value	OFLAGS=OPEN
PASSWD	X	X	X	X	Address	PASSWD=PASSWD1

Figure E-2. Manipulative Macro Instruction Operands for ACB Fields

Operand Keyword	Valid for				Notation Category	Example
	GENCB	MODCB	SHOWCB	TESTCB		
DFASY	X	X	X	X	Address	DFASY=(3)
RESP	X	X	X	X	Address	RESP=RESPEXIT
SCIP	X	X	X	X	Address	SCIP=(*,SCIPADR)
ATTN	X	X	X	X	Address	ATTN=ATTNRTN
LERAD	X	X	X	X	Address	LERAD=LERTN
LOGON	X	X	X	X	Address	LOGON=LGNRTN
LOSTERM	X	X	X	X	Address	LOSTERM=(6)
RELREQ	X	X	X	X	Address	RELREQ=(S,AREA1)
SYNAD	X	X	X	X	Address	SYNAD=(*,AREA2)
TPEND	X	X	X	X	Address	TPEND=(S,4(7))
NSEXIT	X	X	X	X	Address	NSEXIT=ERRORTN
EXLLEN			X	X	Quantity	EXLLEN=(3)

Figure E-3. Manipulative Macro Instruction Operands for EXLST Fields

Operand Keyword	Valid for				Notation Category	Example
	GENCB	MODCB	SHOWCB	TESTCB		
AAREA	X	X	X	X	Address	AAREA=INAREA
AAREALN	X	X	X	X	Quantity	AAREALN=100
ACB	X	X	X	X	Address	ACB=ACB1
AREA	X	X	X	X	Address	AREA=(*,FLWORD)
AREALEN	X	X	X	X	Quantity	AREALEN=132
ARECLEN	X	X	X	X	Quantity	ARECLEN=(S,QUANT1)
ARG	X	X	X	X	Register-Indirect Value	ARG=(7)
BRACKET	X	X		X	Fixed Value	BRACKET=(BB,NEB)
BRANCH	X	X		X	Fixed Value	BRANCH=YES
CHAIN	X	X		X	Fixed Value	CHAIN=LAST
CHNGDIR	X	X		X	Fixed Value	CHNGDIR=(CMD,NREQ)
CODESEL	X	X		X	Fixed Value	CODESEL=STANDARD
CONTROL	X	X		X	Fixed Value	CONTROL=QEC
CRYPT	X	X		X	Fixed Value	CRYPT=YES
DATAFLG				X	Fixed Value	DATAFLG=EOM
ECB	X	X	X	X	Address	ECB=FULLWORD
EXIT	X	X	X	X	Address	EXIT=EXITRTN
FDBK			X	X	Quantity	FDBK=(4)
FDBK2			X	X	Quantity	FDBK2=128
IBSQAC	X	X		X	Fixed Value	IBSQAC=TESTPOS
IBSQVAL	X	X	X	X	Quantity	IBSQVAL=0
IO				X	Fixed Value	IO=COMPLETE
NIB	X	X	X	X	Address	NIB=NIB6
OBSQAC	X	X		X	Fixed Value	OBSQAC=INVALID
OBSQVAL	X	X	X	X	Quantity	OBSQVAL=(4)
OPTCD	X	X		X	Fixed Value	OPTCD=(SYN,SPEC)
POST	X	X		X	Fixed Value	POST=SCHED
RECLEN	X	X	X	X	Quantity	RECLEN=32
RESPOND	X	X		X	Fixed Value	RESPOND=(NEX,FME)
REQ			X	X	Quantity	REQ=VAL23
RPLLEN			X	X	Quantity	RPLLEN=(7)
RTNCD			X	X	Quantity	RTNCD=(*,0(3))
RTYPE	X	X		X	Fixed Value	RTYPE=(NDFSYN,DFASY)
SENSE			X	X	Quantity	SENSE=(REG3)
SEQNO	X	X	X	X	Quantity	SEQNO=(10)
SIGDATA	X	X	X	X	Quantity	SIGDATA=32767
SSENSEI				X	Fixed Value	SSENSEI=CPM
SSENSEO	X	X		X	Fixed Value	SSENSEO=STATE
SSENSMI			X	X	Quantity	SSENSMI=255
SSENSMO	X	X	X	X	Quantity	SSENSMO=(*,0(12))
STYPE	X	X		X	Fixed Value	STYPE=REQ
USENSEI			X	X	Quantity	USENSEI=4095
USENSEO	X	X	X	X	Quantity	USENSEO=(4)
USER			X	X	Quantity	USER=1024

Figure E-4. Manipulative Macro Instruction Operands for RPL Fields

Operand Keyword	Valid for				Notation Category	Example
	GENCB	MODCB	SHOWCB	TESTCB		
BNDAREA	X	X	X	X	Address	BNDAREA=BNDADDR
CID			X	X	Register-Indirect Value	CID=(7)
CON				X	Fixed Value	CON=YES
DEVCHAR			X	X	Indirect Value	DEVCHAR=(*,0(5))
ENCR	X	X		X	Fixed Value	ENCR=SEL
EXLST	X	X	X	X	Address	EXLST=(*,EXLSTADR)
LISTEND	X	X		X	Fixed Value	LISTEND=NO
LOGMODE	X	X	X	X	Fixed Value	LOGMODE=S3270
MODE	X	X	X	X	Fixed Value	MODE=RECORD
NAME	X	X	X	X	Name	NAME=NYCTERM
NIBLEN			X	X	Quantity	NIBLEN=(8)
PROC	X	X		X	Fixed Value	PROC=(EIB,ELC)
RESPLIM	X	X	X	X	Quantity	RESPLIM=10
SDT	X	X		X	Fixed Value	SDT=SYSTEM
USERFLD	X	X	X	X	Quantity	USERFLD=(9)

Figure E-5. Manipulative Macro Instruction Operands for NIB Fields

Appendix F. List, Generate, and Execute Forms of the Manipulative Macro Instructions

The standard form of a manipulative macro instruction expands at assembly time into (1) nonexecutable code that represents the parameters you specified on the macro instruction, and (2) executable code that causes the access method to be entered when the macro instruction is executed. The nonexecutable code, called the parameter list, is assembled at the point in your application program where the macro instruction appears.

Various nonstandard forms of the manipulative macro instructions cause the assembler to:

- Build the parameter list where the macro instruction appears in your source code but assemble no executable code ("simple" list form)
- Assemble code that will build the parameter list at a location of your selection but assemble no executable code that causes the access method to be entered ("remote" list form)
- Assemble code that will build the parameter list at a location of your selection and assemble the code that causes the access method to be entered (generate form)
- Assemble code that will modify a parameter list and cause the access method to be entered during program execution (execute form)

Figure F-1 summarizes the actions of these various forms. It also indicates the types of programs that would use each form, and shows how the MF operand is used for each form.

As indicated in Figure F-1, the various nonstandard forms of the manipulative macro instructions are designated with the MF operand.

Form	During Assembly	During Execution	Useful for	Coded with
Standard	Parameter list built where macro appears in source code	Access method entered	Nonreenterable programs that are *not* sharing or modifying parameter lists	No MF operand
"Simple" List	Parameter list built where macro appears in source code	No executable code (execute form required)	Nonreenterable programs that *are* sharing or modifying parameter lists	MF=L
"Remote" List	Code assembled to build parameter list at a location you specify	Parameter list built, but access method not entered (execute form required)	*Reenterable* programs that *are* sharing or modifying parameter lists	MF=(L,address[,label])
Generate	Code assembled to (1) build parameter list at a location you specify, and (2) enter the access method	Parameter list built and access method entered	*Reenterable* programs that are *not* sharing or modifying parameter lists	MF=(G,address[,label])
Execute	Code assembled (where macro appears in the source code) tc *modify* the parameter list whose address you supply	Parameter list modified and the access method entered	Programs using the list form	MF=(E,address)

Figure F-1. The Forms of the Manipulative Macro Instructions

The MF operand for the *list* form of any manipulative macro instruction is coded as follows:

MF= {L|(L,address [label])}

L
Indicates that this is the list form of the macro instruction. If you code just MF=L ("simple" list form), the parameter list is assembled in place. If you modify the parameter list during program execution, your program is not reenterable.

address
Indicates the location where you want the parameter list to be built during program execution. This area must begin on a fullword boundary and if your program is to be reenterable, must be in dynamically allocated storage. Since the assembler will build executable code that will in turn build the parameter list, the macro instruction must be in the executable portion of your program—that is, not treated as a program constant.

You can code this address in any of the forms of the "address" notation category (described in Appendix E). The notes there stating that register expressions are prohibited for the list form do *not* however apply to the MF operand; this restriction is true only for all the other operands of the macro instruction's list form. For example, MF=(L,(6)) is valid.

label
This is a unique name that is used as a label for an assembled EQU instruction. During program assembly, the assembler equates this label to the *length* (in bytes) of the parameter list that will be built during program execution. You can use this label to assure that you are obtaining enough dynamically allocated storage to hold the parameter list.

When coding *label* follow the same rules that apply to any label for an assembler instruction.

List form example:

```
LA        10,PLISTLEN          OBTAIN LENGTH OF PARAMETER LIST
GETMAIN   R,LV=(10)            OBTAIN STORAGE FOR PARAMETER LIST
LR        5,1                  SAVE STORAGE ADDRESS
TESTCB    RPL=RPL1,DATAFLG=EOM,AM=VTAM,
          MF=(L,(5),PLISTLEN)
```

The MF operand for the *generate* form of any of the manipulative macro instructions is coded as follows:

MF=(G,address[,label])

G
Indicates that this is the generate form of the macro instruction.

address
Indicates the location where you want the parameter list to be built during program execution. Presumably, this will be in dynamically allocated storage. In both manner of use and manner of coding, this address is identical to the address described above for the list form.

label
Indicates the label to be used on an EQU instruction for the length of the parameter list. The function of the *label* operand and its rules for coding are identical to those described above for the list form.

Generate form example:

```
LA          10,PLISTLEN           OBTAIN LENGTH OF PARAMETER LIST
GETMAIN     R,LV=(10)             OBTAIN STORAGE FOR PARAMETER LIST
GENCB       BLK=RPL,AM=VTAM,
            MF=(G,(5),PLISTLEN)
```

The MF operand for the *execute* form of any of the manipulative macro instructions is coded as follows:

MF=(E,address)

E
Indicates that this is the execute form of the macro instruction.

address
Indicates the location of parameter list to be used by the access method.

The execute form allows you to modify the parameter list between the generation of that parameter list and the invocation of the access method routines that use the parameter list. Only the execute form provides a means for you to modify the parameter list after it has been built.

The optional operands you specify on the execute form of a particular macro instruction are converted by the assembler into code that will modify a parameter list during execution. This code can only modify—and not expand—the parameter list. If the parameter list is actually a list form (as is typically the case), never refer to a control block field in an execute form that you did not specify in the list form. If you fail to observe this rule, and thereby attempt to expand the parameter list, the execute form will not be processed successfully, and a return code of 8 will be posted in register 15.

Execute form example:

```
EFORM      MODCB            EXLST=EXLST1,LERAD=(3),AM=VTAM,
                            MF=(E,LFORM)
             .
             .
             .
LFORM      MODCB            EXLST=0,LERAD=0,MF=L,AM=VTAM
```

Optional and Required Operands

Operands that are required in the standard form of the manipulative macro instructions may be optional in the list, generate, or execute forms or may be prohibited in the execute form. The meaning of the operands, however, and the notation used to express them, are the same. The following assembler format tables (Figures F-2 through F-5) indicate which operands are required and which are optional for each form of each manipulative macro instruction. Any operand that does not appear in an assembler format table for a particular form is prohibited.

Name	*Operation*	*Operands*
[symbol]	GENCB List Form	BLK={ ACB|EXLST|RPL|NIB } , AM=VTAM [, keyword=value] ... [, COPIES={ 1|quantity }] [, WAREA=work area address , LENGTH=work area length] , MF={ L|(L, address [, label]) }
[symbol]	GENCB Generate Form	BLK={ ACB|EXLST|RPL|NIB } , AM=VTAM [, COPIES={ 1|quantity }] [, keyword=value] ... [, WAREA=work area address , LENGTH=work area length] , MF=(G, address [, label])
[symbol]	GENCB Execute Form	BLK={ ACB | EXLST | RPL | NIB } ,AM=VTAM [,keyword=value] ... [,COPIES={ 1 quantity }] [,WAREA=work area address ,LENGTH=work area length] ,MF=(E, parameter list address)

Figure F-2. Optional and Required Operands for the Nonstandard Forms of GENCB

Name	*Operation*	*Operands*
[symbol]	MODCB List Form	AM=VTAM { , ACB=acb address , EXLST=exit list address , RPL=rpl address , NIB=nib address } { , field name=new value }... , MF={ L|(L, address [, label]) }
[symbol]	MODCB Generate Form	AM=VTAM { , ACB=acb address , EXLST=exit list address , RPL=rpl address , NIB=nib address } { , field name=new value }... , MF=(G, address [, label])
[symbol]	MODCB Execute Form	AM=VTAM { , ACB=acb address , EXLST=exit list address , RPL=rpl address , NIB=nib address } [{ , field name=new value }...] , MF=(E, parameter list address)

Figure F-3. Optional and Required Operands for the Nonstandard Forms of MODCB

Name	*Operation*	*Operands*
[symbol]	SHOWCB List Form	AM=VTAM [{ , ACB=acb address , EXLST=exit list address , RPL=rpl address , NIB=nib address }] , FIELDS={ field name|(field name, ...) } , AREA=data area address , LENGTH=data area length , MF={ L|(L, address [, label]) }
[symbol]	SHOWCB Generate Form	AM=VTAM [{ , ACB=acb address , EXLST=exit list address , RPL=rpl address , NIB=nib address }] , FIELDS={ field name|(field name, ...) } , AREA=data area address , LENGTH=data area length , MF=(G, address [, label])
[symbol]	SHOWCB Execute Form	AM=VTAM [{ , ACB=acb address , EXLST=exit list address , RPL=rpl address , NIB=nib address }] [, AREA=data area address] , MF=(E, parameter list address)

Figure F-4. Optional and Required Operands for the Nonstandard Forms of SHOWCB

Name	*Operation*	*Operands*
[symbol]	TESTCB List Form	AM=VTAM [{, ACB=acb address , EXLST=exit list address , RPL=rpl address , NIB=nib address}] , field name=test value [, ERET=error routine address] MF={ L|(L, address [, label]) }
[symbol]	TESTCB Generate Form	AM=VTAM [{, ACB=acb address , EXLST=exit list address , RPL=rpl address , NIB=nib address}] , field name=test value [, ERET=error routine address] , MF=(G, address [, label])
[symbol]	TESTCB Execute Form	AM=VTAM [{, ACB=acb address , EXLST=exit list address , RPL=rpl address , NIB=nib address}] [, field name=test value] [, ERET=error routine address] , MF=(E, parameter list address)

Figure F-5. Optional and Required Operands for the Nonstandard Forms of TESTCB

Appendix G. Summary of Register Usage

The following table shows what ACF/VTAM does with the general-purpose registers before it returns control to the application program at the next sequential instruction. It indicates which registers are left unchanged by the ACF/VTAM macro instructions and which ones may be modified between the time the macro instruction is executed and control is returned to the application program. The table also shows the disposition of the registers when any of the exit routines receives control.

	Register 0	Register 1	Registers 2-12	Register 13	Register 14	Register 15
Upon return from OPEN and CLOSE macros	Unpredictable	Unpredictable	Unmodified	Unmodified [1]	Unpredictable	Return code
Upon return from RPL-based macros, including CHECK	[2]	Address of RPL	Unmodified	Unmodified [1]	Unpredictable	[2]
Upon return from GENCB	Error return code or control block length [3]	Control block address [3]	Unmodified	Unmodified [1]	Unpredictable	General return code
Upon return from SHOWCB	Error return code	Unpredictable	Unmodified	Unmodified [1]	Unpredictable	General return code
Upon return from MODCB or TESTCB	Error return code[4]	Unpredictable	Unmodified	Unmodified [1]	Unpredictable	General return code
Upon invocation of the LERAD or SYNAD exit routine	Recovery action return code	Address of RPL	Unmodified since request issued		Return address	Address of exit routine
Upon invocation of the other exit routine	Unpredictable	Address of ACF/VTAM-supplied parameter list	Unpredictable		Return address	Address of exit routine

[1] Register 13 must indicate the address of an 18-word save area when the macro instruction is executed.

[2] If the operation completed normally, register 15 is set to 0. (For some macros completing normally but with a special condition, register 0 is also set - - see Appendix C.) If an error occurred and the LERAD or SYNAD exit routine has been invoked, registers 0 and 15 contain the values set in them by the exit routine. If an error occurred and no LERAD or SYNAD exit routine exists, ACF/VTAM sets register 15 to 4 or 32 (decimal) and places a recovery action return code in register 0.

[3] When GENCB is used to build control blocks in dynamically allocated storage ana GENCB is completed successfully (register 15 set to 0), register 1 contains the address of the generated control blocks and register 0 contains the length of the control blocks, in bytes. If GENCB is completed unsuccessfully (register 15 set to 4), register 0 contains an error return code and register 1 is unpredictable. If GENCB is completed unsuccessfully (register 15 set to 8), no error return code is set in register 0.

[4] If SHOWCB, MODCB, or TESTCB is completed unsuccessfully (with register 15 set to 4), register 0 contains an error return code. If the macro instruction is completed unsuccessfully (with register 15 set to 8), no error return code is set in register 0. If the macro instruction is completed successfully (with register 15 set to 0), no particular value is set in register 0 (although it may have been modified by the macro instruction).

Figure G-1. Register Contents Upon Return of Control

Appendix H. Control Block Formats and DSECTs

The ACB, EXLST, RPL, and NIB can be initialized, modified, and examined either with manipulative macro instructions (GENCB, MODCB, SHOWCB, TESTCB) or with assembler instructions. Manipulation via assembler instructions requires access to the internal structure of the control block, because displacements and bit settings must be incorporated into the assembler instructions. However, bit settings and displacements are subject to change from release to release; to avoid recoding assembler instructions when such changes occur, a DSECT should be used. IBM-supplied DSECTs are provided as part of the system macro library (source statement library in DOS/VS, SYS1.MACLIB in OS/VS). They are described in this appendix.

A DSECT is an overlay (map) containing labels that correspond to field displacements, bit settings, and byte values.

A *field displacement* is the displacement of a field from the beginning of the control block, as defined by the DS (or ORG) instructions in the DSECT. A *bit setting* is an assembler EQU instruction (such as LABEL1 EQU X'80') that identifies a particular bit or bits. The label could be used as the immediate data byte in a TM instruction, for example. A *byte value* is also an assembler EQU instruction (such as LABEL2 EQU X'23') that identifies a particular value in a byte. The label could be used as the immediate data byte of a CLI instruction, for example.

The general manner in which DSECTs are used (register preparation, USING instructions, etc.) is described in "The DSECT Instruction" in *OS/VS and DOS/VS Assembler Language,* GC33-4010.

A table (Figure H-1) is organized alphabetically by label name. It will help you locate a particular label in the format maps and DSECT descriptions.

The format maps in this appendix show the format of the control blocks. They provide a means by which a dump of the control block can be interpreted and they make the DSECT descriptions that accompany them more easily understood. The following formats and DSECTs are described:

Control Block		**DSECT Name and Operands***	
ACB	(for DOS/VS)	IFGACB	AM=VTAM
ACB	(for OS/VS)	IFGACB	AM=VTAM
EXLST	(for DOS/VS and OS/VS)	IFGEXLST	AM=VTAM
RPL	(for DOS/VS)	IFGRPL	AM=VTAM
RPL	(for OS/VS)	IFGRPL	AM=VTAM
RPL	(for DOS/VS and OS/VS)	ISTUSFBC	(This is a separate DSECT for the RPL's RTNCD, FDBK, and FDBK2 fields.)
Session Parameters	(for DOS/VS and OS/VS)	ISTDBIND	(This is a separate DSECT which describes the session parameters obtained by INQUIRE or sent by OPNDST.)**
NIB	(for DOS/VS and OS/VS)	ISTDNIB	
NIB	(for DOS/VS and OS/VS)	ISTDVCHR***	(This is a separate DSECT for the NIB's DEVCHAR field.)

Control Block		DSECT Name and Operands*	
NIB	(for DOS/VS and OS/VS)	ISTDPROC***	(This is a separate DSECT for the NIB's PROC field.)

*This is what you code in your program to assemble the DSECT.

**This DSECT is described in Appendix J.

***If the DSECT for the entire NIB is used (ISTDNIB), the DSECT for this field is included automatically and should not be specified.

The format maps and the DSECT descriptions identify both the external field name (the declarative or manipulative macro keyword as used throughout this manual) and the internal field name (DSECT label) for each control block field. The DSECT descriptions are arranged in alphabetical order according to the external field name. To avoid the risk of duplicating DSECT labels, avoid using any label in your program that begins with the following characters: ACB, EXL, RPL, NIB, PRO, DEV, BIN, or USF. Users of these DSECTs must be very careful to set all relevant bits and fields. Mutually exclusive settings are indicated by indentations in the "Meaning" column. Related settings all appear under the same external name in the "Field" column.

If you compare listings of the actual DSECTs with the DSECT descriptions provided here, you will note that the actual DSECTs are more extensive. The fields that have been eliminated here are primarily fields that are set and used by ACF/VTAM, not by the application program. The control block fields that you set or examine should be limited to those fields that are included in the DSECT descriptions in this manual. (For this reason, you should not use a DSECT to initialize a control block; use GENCB or the appropriate ACB, EXLST, RPL, or NIB macro instruction instead.)

DSECT Label	Control Block	Field Name	Type of Label	DS or ORG Label for EQU
ACBABNDP	ACB	ERROR	EQU	ACBERFLG
ACBAM	ACB	AM	DS or ORG	
ACBAPID	ACB	APPLID	DS or ORG	
ACBCALR	ACB	ERROR	EQU	ACBERFLG
ACBCDSNR	ACB	ERROR	EQU	ACBERFLG
ACBERFLG	ACB	ERROR	DS or ORG	
ACBLENG	ACB	ACBLEN	DS or ORG	
ACBLOGON	ACB	MACRF	EQU	ACBMACR2
ACBMACR2	ACB	MACRF	DS or ORG	
ACBOAHLT	ACB	ERROR	EQU	ACBERFLG
ACBOALR	ACB	ERROR	EQU	ACBERFLG
ACBOANAT	ACB	ERROR	EQU	ACBERFLG
ACBOANSN	ACB	ERROR	EQU	ACBERFLG
ACBOAPAA	ACB	ERROR	EQU	ACBERFLG
ACBOAPLE	ACB	ERROR	EQU	ACBERFLG
ACBOAPNM	ACB	ERROR	EQU	ACBERFLG
ACBOAVFY	ACB	ERROR	EQU	ACBERFLG
ACBOFLGS	ACB	OFLAGS	DS or ORG	
ACBONVRT	ACB	ERROR	EQU	ACBERFLG
ACBOPEN	ACB	OFLAGS	EQU	ACBOFLGS
ACBOPWLE	ACB	ERROR	EQU	ACBERFLG
ACBOPWSE	ACB	ERROR	EQU	ACBERFLG
ACBOUNDF	ACB	ERROR	EQU	ACBERFLG
ACBOVINA	ACB	ERROR	EQU	ACBERFLG
ACBPASSW	ACB	PASSWD	DS or ORG	
ACBUEL	ACB	EXLST	DS or ORG	
ACBVTAM	ACB	AM	EQU	ACBAM
DEVBASIC	NIB	DEVCHAR	EQU	DEVMODE
DEVCATTN	NIB	DEVCHAR	EQU	DEVFLAGS
DEVCBSC	NIB	DEVCHAR	EQU	DEVFLAGS
DEVCC	NIB	DEVCHAR	EQU	DEVTCODE
DEVCCHEK	NIB	DEVCHAR	EQU	DEVFLAGS
DEVCCTL	NIB	DEVCHAR	EQU	DEVSHCH
DEVCHAR3	NIB	DEVCHAR	EQU	DEVFLAGS
DEVCODE	NIB	DEVCHAR		
DEVCONVR	NIB	DEVCHAR	EQU	DEVSHCH
DEVCRVB	NIB	DEVCHAR	EQU	DEVFLAGS
DEVCSLPN	NIB	DEVCHAR	EQU	DEVFLAGS
DEVCSSL	NIB	DEVCHAR	EQU	DEVFLAGS
DEVCSTCL	NIB	DEVCHAR	EQU	DEVFLAGS
DEVCSWL	NIB	DEVCHAR	EQU	DEVFLAGS
DEVFCCTL	NIB	DEVCHAR	EQU	DEVSHCH
DEVFLAGS	NIB	DEVCHAR	DS or ORG	
DEVINPUT	NIB	DEVCHAR	EQU	DEVSHCH
DEVLU	NIB	DEVCHAR	EQU	DEVTCODE
DEVMCODE	NIB	DEVCHAR	DS or ORG	
DEVMOD1	NIB	DEVCHAR	EQU	DEVMCODE
DEVMOD2	NIB	DEVCHAR	EQU	DEVMCODE
DEVMTA	NIB	DEVCHAR	EQU	DEVTCODE
DEVNNSPT	NIB	DEVCHAR	EQU	DEVSHCH
DEVOTPUT	NIB	DEVCHAR	EQU	DEVSHCH
DEVPHYSA	NIB	DEVCHAR	DS or ORG	
DEVREC	NIB	DEVCHAR	EQU	DEVMODE
DEVRSV01	NIB	DEVCHAR	EQU	DEVSHCH
DEVSHCH	NIB	DEVCHAR	DS or ORG	
DEVSPS	NIB	DEVCHAR	EQU	DEVSHCH
DEVSUBND	NIB	DEVCHAR	EQU	DEVSHCH
DEVSYS3	NIB	DEVCHAR	EQU	DEVTCODE
DEVTCODE	NIB	DEVCHAR	DS or ORG	
DEVTWX	NIB	DEVCHAR	EQU	DEVTCODE
DEVWTTY	NIB	DEVCHAR	EQU	DEVTCODE
DEV50	NIB	DEVCHAR	EQU	DEVTCODE
DEV83B3	NIB	DEVCHAR	EQU	DEVTCODE

Figure H-1 (Part 1 of 9). Alphabetical List of Control Block Labels

DSECT Label	Control Block	Field Name	Type of Label	DS or ORG Label for EQU
DEV115A	NIB	DEVCHAR	EQU	DEVTCODE
DEV545	NIB	DEVCHAR	EQU	DEVTCODE
DEV1017	NIB	DEVCHAR	EQU	DEVTCODE
DEV1018	NIB	DEVCHAR	EQU	DEVTCODE
DEV1050	NIB	DEVCHAR	EQU	DEVTCODE
DEV1052	NIB	DEVCHAR	EQU	DEVTCODE
DEV1053	NIB	DEVCHAR	EQU	DEVTCODE
DEV1054	NIB	DEVCHAR	EQU	DEVTCODE
DEV1055	NIB	DEVCHAR	EQU	DEVTCODE
DEV1056	NIB	DEVCHAR	EQU	DEVTCODE
DEV1057	NIB	DEVCHAR	EQU	DEVTCODE
DEV1058	NIB	DEVCHAR	EQU	DEVTCODE
DEV1092	NIB	DEVCHAR	EQU	DEVTCODE
DEV1130	NIB	DEVCHAR	EQU	DEVTCODE
DEV1255	NIB	DEVCHAR	EQU	DEVTCODE
DEV1800	NIB	DEVCHAR	EQU	DEVTCODE
DEV2203	NIB	DEVCHAR	EQU	DEVTCODE
DEV2213	NIB	DEVCHAR	EQU	DEVTCODE
DEV2265	NIB	DEVCHAR	EQU	DEVTCODE
DEV2502	NIB	DEVCHAR	EQU	DEVTCODE
DEV2701	NIB	DEVCHAR	EQU	DEVTCODE
DEV2703	NIB	DEVCHAR	EQU	DEVTCODE
DEV2715	NIB	DEVCHAR	EQU	DEVTCODE
DEV2740	NIB	DEVCHAR	EQU	DEVTCODE
DEV2741	NIB	DEVCHAR	EQU	DEVTCODE
DEV2770	NIB	DEVCHAR	EQU	DEVTCODE
DEV2780	NIB	DEVCHAR	EQU	DEVTCODE
DEV2972	NIB	DEVCHAR	EQU	DEVTCODE
DEV2980	NIB	DEVCHAR	EQU	DEVTCODE
DEV3125	NIB	DEVCHAR	EQU	DEVTCODE
DEV3135	NIB	DEVCHAR	EQU	DEVTCODE
DEV3271	NIB	DEVCHAR	EQU	DEVTCODE
DEV3272	NIB	DEVCHAR	EQU	DEVTCODE
DEV3275	NIB	DEVCHAR	EQU	DEVTCODE
DEV3277	NIB	DEVCHAR	EQU	DEVTCODE
DEV3284	NIB	DEVCHAR	EQU	DEVTCODE
DEV3286	NIB	DEVCHAR	EQU	DEVTCODE
DEV3704	NIB	DEVCHAR	EQU	DEVTCODE
DEV3705	NIB	DEVCHAR	EQU	DEVTCODE
DEV3735	NIB	DEVCHAR	EQU	DEVTCODE
DEV3741	NIB	DEVCHAR	EQU	DEVTCODE
DEV3747	NIB	DEVCHAR	EQU	DEVTCODE
DEV3780	NIB	DEVCHAR	EQU	DEVTCODE
DEV5496	NIB	DEVCHAR	EQU	DEVTCODE
EXLATTNF	EXLST	ATTN	DS or ORG	
EXLATTNP	EXLST	ATTN	DS or ORG	
EXLATTNS	EXLST	ATTN	EQU	EXLATTNF
EXLDFASF	EXLST	DFASY	DS or ORG	
EXLDFASP	EXLST	DFASY	DS or ORG	
EXLDFASS	EXLST	DFASY	EQU	EXLDFASF
EXLLEN2	EXLST	EXLLEN	DS or ORG	
EXLLERF	EXLST	LERAD	DS or ORG	
EXLLERP	EXLST	LERAD	DS or ORG	
EXLLERS	EXLST	LERAD	EQU	EXLLERF
EXLLGNF	EXLST	LOGON	DS or ORG	
EXLLGNP	EXLST	LOGON	DS or ORG	
EXLLGNS	EXLST	LOGON	EQU	EXLLGNF
EXLNLGNF	EXLST	LOSTERM	DS or ORG	
EXLNLGNP	EXLST	LOSTERM	DS or ORG	
EXLNLGNS	EXLST	LOSTERM	EQU	EXLNLGNF
EXLRESPF	EXLST	RESP	DS or ORG	
EXLRESPP	EXLST	RESP	DS or ORG	
EXLRESPS	EXLST	RESP	EQU	EXLRESPF

Figure H-1 (Part 2 of 9). Alphabetical List of Control Block Labels

DSECT Label	Control Block	Field Name	Type of Label	DS or ORG Label for EQU
EXLRLRQF	EXLST	RELREQ	DS or ORG	
EXLRLRQP	EXLST	RELREQ	DS or ORG	
EXLRLRQS	EXLST	RELREQ	EQ	EXLRLRQF
EXLSCIPF	EXLST	SCIP	DS or ORG	
EXLSCIPP	EXLST	SCIP	DS or ORG	
EXLSCIPS	EXLST	SCIP	EQU	EXLSCIPF
EXLSYNF	EXLST	SYNAD	DS or ORG	
EXLSYNP	EXLST	SYNAD	DS or ORG	
EXLSYNS	EXLST	SYNAD	EQU	EXLSYNF
EXLTNSEF	EXLST	NSEXIT	DS or ORG	
EXLTNSEP	EXLST	NSEXIT	DS or ORG	
EXLTNSEC	EXLST	NSEXIT	EQU	EXLTNSEF
EXLTPNDF	EXLST	TPEND	DS or ORG	
EXLTPNDP	EXLST	TPEND	DS or ORG	
EXLTPNDS	EXLST	TPEND	EQU	EXLTPNDF
NIBCID	NIB	CID	DS or ORG	
NIBCON	NIB	CON	EQU	NIBFLG1
NIBDEVCH	NIB	DEVCHAR	DS or ORG	
NIBEXLST	NIB	EXLST	DS or ORG	
NIBFLG1	NIB	CON, LISTEND, SDT	DS or ORG	
NIBNACLG	NIB		EQU	NIBFLG1
NIBLAST	NIB	LISTEND	EQU	NIBFLG1
NIBLEN	NIB	NIBLEN	DS or ORG	
NIBLIMIT	NIB	RESPLIM	DS or ORG	
NIBLMODE	NIB	LOGMODE	DS or ORG	
NIBMODE	NIB	MODE	DS or ORG	
NIBNDAR	NIB	BNDAREA	DS or ORG	
NIBPROCD	NIB	PROC	DS or ORG	
NIBSDAPP	NIB	SDT	EQU	NIBFLG1
NIBSYM	NIB	NAME	DS or ORG	
NIBTREQ	NIB	CRYPT	EQU	NIBFLG1
NIBTSEL	NIB	CRYPT	EQU	NIBFLG1
NIBUSER	NIB	USERFLD	DS or ORG	
PROCA	NIB	PROC	EQU	PROPROC1
PROCFTX	NIB	PROC	EQU	PROPROC2
PROCS	NIB	PROC	EQU	PROPROC1
PRODFASY	NIB	PROC	EQU	PROPROC1
PROEIB	NIB	PROC	EQU	PROPROC4
PROEMLC	NIB	PROC	EQU	PROPROC2
PROERPI	NIB	PROC	EQU	PROPROC3
PROERPO	NIB	PROC	EQU	PROPROC2
PROFIFOR	NIB	PROC	EQU	PROPROC2
PROLGIN	NIB	PROC	EQU	PROPROC3
PROLGOT	NIB	PROC	EQU	PROPROC2
PROMODB	NIB	PROC	EQU	PROPROC4
PROMODC	NIB	PROC	EQU	PROPROC4
PROMODM	NIB	PROC	EQU	PROPROC4
PROMODT	NIB	PROC	EQU	PROPROC4
PROMONIT	NIB	PROC	EQU	PROPROC3
PRONTFL	NIB	PROC	EQU	PROPROC2
PRONTO	NIB	PROC	EQU	PROPROC3
PROPROC1	NIB	PROC	DS or ORG	
PROPROC2	NIB	PROC	DS or ORG	
PROPROC3	NIB	PROC	DS or ORG	
PROPROC4	NIB	PROC	DS or ORG	
PRORESPX	NIB	PROC	EQU	PROPROC1
PRORPLC	NIB	PROC	EQU	PROPROC1
PROSYSR	NIB	PROC	EQU	PROPROC2
PROTRUNC	NIB	PROC	EQU	PROPROC1
PROXPOPT	NIB	PROC	EQU	PROPROC1
RPLAAREA	RPL	AAREA	DS or ORG	

Figure H-1 (Part 3 of 9). Alphabetical List of Control Block Labels

DSECT Label	Control Block	Field Name	Type of Label	DS or ORG Label for EQU
RPLAARLN	RPL	AAREALN	DS or ORG	
RPLACTIV	RPL	CHECK	DS or ORG	
RPLAPPST	RPL	OPTCD	EQU	RPLOPT9
RPLARCLN	RPL	ARECLEN	DS or ORG	
RPLAREA	RPL	AREA	DS or ORG	
RPLARG	RPL	ARG-NIB	DS or ORG	
RPLASY	RPL	OPTCD	EQU	RPLOPT1
RPLBB	RPL	BRACKET	EQU	RPLRH3
RPLBID	RPL	CONTROL	EQU	RPLCNTCD
RPLBIS	RPL	CONTROL	EQU	RPLCNTCD
RPLBRANC	RPL	BRANCH	EQU	RPLEXTDS
RPLBSCID	RPL	OPTCD	EQU	RPLOPT10
RPLBUFL	RPL	AREALEN	DS or ORG	
RPLCBLKE	RPL	RTNCD	EQU	RPLRTNCD
RPLCHASE	RPL	CONTROL	EQU	RPLCNTDF
RPLCHN	RPL	CHAIN	DS or ORG	
RPLCHNG	RPL	REQ	EQU	RPLREQ
RPLCHREQ	RPL	CHNGDIR	EQU	RPLRH3
RPLCIDE	RPL	OPTCD	EQU	RPLOPT9
RPLCLACB	RPL	REQ	EQU	RPLREQ
RPLCLEAR	RPL	CONTROL	EQU	RPLCNTSC
RPLCLOSE	RPL	REQ	EQU	RPLREQ
RPLCMD	RPL	CHNGDIR	EQU	RPLRH3
RPLCMDRT	RPL	RTNCD	EQU	RPLRTNCD
RPLCNALL	RPL	OPTCD	EQU	RPLOPT7
RPLCNANY	RPL	OPTCD	EQU	RPLOPT7
RPLCNCEL	RPL	CONTROL	EQU	RPLCNTDF
RPLCNTDC	RPL	CONTROL	DS or ORG	
RPLCNTDF	RPL	CONTROL	DS or ORG	
RPLCNTSC	RPL	CONTROL	DS or ORG	
RPLCOND	RPL	OPTCD	EQU	RPLOPT6
RPLCOUNT	RPL	OPTCD	EQU	RPLOPT9
RPLCPMI	RPL	SSENSEI	EQU	RPLSSEI
RPLCPMO	RPL	SSENSEO	EQU	RPLSSEO
RPLCSI	RPL	CODESEL	EQU	RPLRH3
RPLDACB	RPL	ACB	DS or ORG	
RPLDATA	RPL	CONTROL	EQU	RPLCNTDF
RPLDEVCH	RPL	OPTCD	EQU	RPLOPT9
RPLDEVDC	RPL	RTNCD	EQU	RPLRTNCD
RPLDFASY	RPL	RTYPE	EQU	RPLSRTYP
RPLDLGIN	RPL	OPTCD	EQU	RPLOPT5
RPLDO	RPL	REQ	EQU	RPLREQ
RPLDSPLY	RPL	OPTCD	EQU	RPLOPT10
RPLEAU	RPL	OPTCD	EQU	RPLOPT5
RPLEB	RPL	BRACKET	EQU	RPLRH3
RPLECB	RPL	CHECK, ECB-EXIT	DS or ORG	
RPLECBIN	RPL	ECB	EQU	RPLOPT1
RPLEOB	RPL	OPTCD	EQU	RPLOPT6
RPLEOM	RPL	OPTCD	EQU	RPLOPT6
RPLEOT	RPL	OPTCD	EQU	RPLOPT6
RPLERASE	RPL	OPTCD	EQU	RPLOPT5
RPLEX	RPL	RESPOND	EQU	RPLVTFL2
RPLEXIT	RPL	EXIT	EQU	RPLEXTDS
RPLEXRQ	RPL	RTNCD	EQU	RPLRTNCD
RPLEXRS	RPL	RTNCD	EQU	RPLRTNCD
RPLEXSCH	RPL	CHECK	EQU	RPLEXTDS
RPLEXTDS	RPL	ARG-NIB, BRANCH, CHECK, EXIT	DS or ORG	
RPLFDB2	RPL	FDBK2	DS or ORG	
RPLFDB3	RPL	FDBK-DATAFLG	DS or ORG	

Figure H-1 (Part 4 of 9). Alphabetical List of Control Block Labels

DSECT Label	Control Block	Field Name	Type of Label	DS or ORG Label for EQU
RPLFDBK2	RPL	SENSE	DS or ORG	
RPLFII	RPL	SSENSEI	EQU	RPLSSEI
RPLFIO	RPL	SSENSEO	EQU	RPLSSEO
RPLFIRST	RPL	CHAIN	EQU	RPLCHN
RPLFMHDR	RPL	OPTCD	EQU	RPLOPT12
RPLIBSQ	RPL	IBSQAC	DS or ORG	
RPLIBSQV	RPL	IBSQVAL	DS or ORG	
RPLIIGN	RPL	IBSQAC	EQU	RPLIBSQ
RPLIINV	RPL	IBSQAC	EQU	RPLIBSQ
RPLINEG	RPL	IBSQAC	EQU	RPLIBSQ
RPLINQIR	RPL	REQ	EQU	RPLREQ
RPLINTPT	RPL	REQ	EQU	RPLREQ
RPLIPOS	RPL	IBSQAC	EQU	RPLIBSQ
RPLIRSET	RPL	IBSQAC	EQU	RPLIBSQ
RPLISET	RPL	IBSQAC	EQU	RPLIBSQ
RPLITST	RPL	IBSQAC	EQU	RPLIBSQ
RPLKEEP	RPL	OPTCD	EQU	RPLOPT12
RPLLAST	RPL	CHAIN	EQU	RPLCHN
RPLLEN2	RPL	RPLLEN	DS or ORG	
RPLLIMEX	RPL	RTNCD	EQU	RPLRTNCD
RPLLOCK	RPL	OPTCD	EQU	RPLOPT6
RPLLOGIC	RPL	RTNCD	EQU	RPLRTNCD
RPLLOGON	RPL	OPTCD	EQU	RPLOPT9
RPLLUS	RPL	CONTROL	EQU	RPLCNTDC
RPLMIDLE	RPL	CHAIN	EQU	RPLCHN
RPLNCOND	RPL	OPTCD	EQU	RPLOPT6
RPLNERAS	RPL	OPTCD	EQU	RPLOPT5
RPLNEXIT	RPL	EXIT	EQU	RPLEXTDS
RPLNFME	RPL	RESPOND	EQU	RPLVTFL2
RPLNFSYN	RPL	RTYPE	EQU	RPLSRTYP
RPLNGRCC	RPL	RTNCD	EQU	RPLRTNCD
RPLNIB	RPL	ARG-NIB	EQU	RPLEXTDS
RPLNIBTK	RPL	OPTCD	EQU	RPLOPT12
RPLNODE	RPL	OPTCD	EQU	RPLOPT5
RPLNOERR	RPL	RTNCD	EQU	RPLRTNCD
RPLNOIN	RPL	RTNCD	EQU	RPLRTNCD
RPLOBSQ	RPL	OBSQAC	DS or ORG	
RPLOBSQV	RPL	OBSQVAL	DS or ORG	
RPLODACP	RPL	OPTCD	EQU	RPLOPT8
RPLODACQ	RPL	OPTCD	EQU	RPLOPT8
RPLOIGN	RPL	OBSQAC	EQU	RPLOBSQ
RPLOINV	RPL	OBSQAC	EQU	RPLOBSQ
RPLONEG	RPL	OBSQAC	EQU	RPLOBSQ
RPLONLY	RPL	CHAIN	EQU	RPLCHN
RPLOPNDS	RPL	REQ	EQU	RPLREQ
RPLOPOS	RPL	OBSQAC	EQU	RPLOBSQ
RPLOPT1	RPL	ECB, OPTCD	DS or ORG	
RPLOPT5	RPL	OPTCD	DS or ORG	
RPLOPT6	RPL	OPTCD	DS or ORG	
RPLOPT7	RPL	OPTCD	DS or ORG	
RPLOPT8	RPL	OPTCD	DS or ORG	
RPLOPT9	RPL	OPTCD	DS or ORG	
RPLOPT10	RPL	OPTCD	DS or ORG	
RPLOPT11	RPL	OPTCD	DS or ORG	
RPLOPT12	RPL	OPTCD	DS or ORG	
RPLORSET	RPL	OBSQAC	EQU	RPLOBSQ
RPLOSET	RPL	OBSQAC	EQU	RPLOBSQ
RPLOTST	RPL	OBSQAC	EQU	RPLOBSQ
RPLPATHI	RPL	SSENSEI	EQU	RPLSSEI
RPLPHYSC	RPL	RTNCD	EQU	RPLRTNCD
RPLPOST	RPL	CHECK	EQU	RPLECB
RPLPSOPT	RPL	OPTCD	EQU	RPLOPT5

Figure H-1 (Part 5 of 9). Alphabetical List of Control Block Labels

DSECT Label	Control Block	Field Name	Type of Label	DS or ORG Label for EQU
RPLPURGE	RPL	RTNCD	EQU	RPLRTNCD
RPLQC	RPL	CONTROL	EQU	RPLCNTDF
RPLQEC	RPL	CONTROL	EQU	RPLCNTDF
RPLQOPT	RPL	OPTCD	EQU	RPLOPT7
RPLQRI	RPL	RESPOND	EQU	RPLVTF2
RPLQUIES	RPL	OPTCD	EQU	RPLOPT11
RPLQUISE	RPL	REQ	EQU	RPLREQ
RPLRCVCD	RPL	REQ	EQU	RPLREQ
RPLRDSOH	RPL	FDBK-DATAFLG	EQU	RPLFDB3
RPLREAD	RPL	REQ	EQU	RPLREQ
RPLRELQ	RPL	CONTROL	EQU	RPLCNTDF
RPLREOB	RPL	FDBK-DATAFLG	EQU	RPLFDB3
RPLREOM	RPL	FDBK-DATAFLG	EQU	RPLFDB3
RPLREOT	RPL	FDBK-DATAFLG	EQU	RPLFDB3
RPLREQ	RPL	REQ	DS or ORG	
RPLRESET	RPL	REQ	EQU	RPLREQ
RPLRH3	RPL	BRACKET, CHNDIR, CODESEL	DS or ORG	
RPLRLEN	RPL	RECLEN	DS or ORG	
RPLRLG	RPL	FDBK-DATAFLG	EQU	RPLFDB3
RPLRQR	RPL	CONTROL	EQU	RPLCNTSC
RPLRRESP	RPL	RTYPE	EQU	RPLSRTYP
RPLRRI	RPL	SSENSEI	EQU	RPLSSEI
RPLRRN	RPL	RESPOND	EQU	RPLVTFL2
RPLRRO	RPL	SSENSEO	EQU	RPLSSEO
RPLRSHUT	RPL	CONTROL	EQU	RPLCNTSC
RPLRSRCD	RPL	REQ	EQU	RPLREQ
RPLRTNCD	RPL	RTNCD	DS or ORG	
RPLRTR	RPL	CONTROL	EQU	RPLCNTDC
RPLSAV13	RPL		DS or ORG	
RPLSBI	RPL	CONTROL	EQU	RPLCNTDC
RPLSCHED	RPL	POST	EQU	RPLVTFL2
RPLSDT	RPL	CONTROL	EQU	RPLCNTSC
RPLSEQNO	RPL	SEQNO	DS or ORG	
RPLSHUTC	RPL	CONTROL	EQU	RPLCNTSC
RPLSHUTD	RPL	CONTROL	EQU	RPLCNTSC
RPLSIGDA	RPL	SIGDATA	DS or ORG	
RPLSIGNL	RPL	CONTROL	EQU	RPLCNTDC
RPLSLICT	RPL	REQ	EQU	RPLREQ
RPLSMLGO	RPL	REQ	EQU	RPLREQ
RPLSNDCD	RPL	REQ	EQU	RPLREQ
RPLSPARM	RPL	OPTCD	EQU	RPLOPT10
RPLSPECC	RPL	RTNCD	EQU	RPLRTNCD
RPLSPECC	RPL	RTNCD	EQU	RPLRTNCD
RPLSRESP	RPL	STYPE	EQU	RPLSRTYP
RPLSRTYP	RPL	RTYPE, STYPE	DS or ORG	
RPLSSCCD	RPL	REQ	EQU	RPLREQ
RPLSSEI	RPL	SSENSEI	DS or ORG	
RPLSSEO	RPL	SSENSEO	DS or ORG	
RPLSSMI	RPL	SSENSMI	DS or ORG	
RPLSSMO	RPL	SSENSMO	DS or ORG	
RPLSTART	RPL	OPTCD	EQU	RPLOPT11
RPLSTATI	RPL	SSENSEI	EQU	RPLSSEI
RPLSTATO	RPL	SSENSEO	EQU	RPLSSEO
RPLSTOP	RPL	OPTCD	EQU	RPLOPT11
RPLSTSN	RPL	CONTROL	EQU	RPLCNTSC
RPLSYERR	RPL	RTNCE	EQU	RPLRTNCD
RPLTCRYP	RPL	CRYPT	EQU	RPLEXTDS
RPLTERMS	RPL	OPTCD	EQU	RPLOPT9
RPLTOPL	RPL	OPTCD	EQU	RPLOPT9
RPLTOPNS	RPL	REQ	EQU	RPLREQ

Figure H-1 (Part 6 of 9). Alphabetical List of Control Block Labels

DSECT Label	Control Block	Field Name	Type of Label	DS or ORG Label for EQU
RPLTREQ	RPL	REQ	EQU	RPLREQ
RPLTRMS	RPL	REQ	EQU	RPLREQ
RPLTRUNC	RPL	OPTCD	EQU	RPLOPT12
RPLTSKY	RPL	OPTCD	EQU	RPLOPT10
RPLUINPT	RPL	FDBK-DATAFLG	EQU	RPLFDB3
RPLUSFLD	RPL	USER	DS or ORG	
RPLUSNSI	RPL	USENSEI	DS or ORG	
RPLUSNSO	RPL	USENSEO	DS or ORG	
RPLVTFL2	RPL	POST, RESPOND	DS or ORG	
RPLVTMNA	RPL	RTNCD	EQU	RPLRTNCD
RPLWRITE	RPL	REQ	EQU	RPLREQ
RPLWROPT	RPL	OPTCD	EQU	RPLOPT5
USFABNDO	RPL	FDBK2	EQU	RPLFDB2
USFACINV	RPL	FDBK2	EQU	RPLFDB2
USFANS	RPL	FDBK2	EQU	RPLFDB2
USFAOK	RPL	FDBK2	EQU	RPLFDB2
USFAOOK	RPL	FDBK2	EQU	RPLFDB2
USFAPNAC	RPL	FDBK2	EQU	RPLFDB2
USFATNRC	RPL	FDBK2	EQU	RPLFDB2
USFATSFI	RPL	FDBK2	EQU	RPLFDB2
USFBHSUN	RPL	FDBK2	EQU	RPLFDB2
USFBSCSM	RPL	FDBK2	EQU	RPLFDB2
USFBTEOR	RPL	FDBK2	EQU	RPLFDB2
USFBTHEX	RPL	FDBK2	EQU	RPLFDB2
USFCBERR	RPL	FDBK2	EQU	RPLFDB2
USFCCCPY	RPL	FDBK2	EQU	RPLFDB2
USFCIDNG	RPL	FDBK2	EQU	RPLFDB2
USFCLOCC	RPL	FDBK2	EQU	RPLFDB2
USFCLRED	RPL	FDBK2	EQU	RPLFDB2
USFCLSIP	RPL	FDBK2	EQU	RPLFDB2
USFCPCNT	RPL	FDBK2	EQU	RPLFDB2
USFCPYE1	RPL	FDBK2	EQU	RPLFDB2
USFCPYE2	RPL	FDBK2	EQU	RPLFDB2
USFCRIRT	RPL	FDBK2	EQU	RPLFDB2
USFCRNF	RPL	FDBK2	EQU	RPLFDB2
USFCRPLN	RPL	FDBK2	EQU	RPLFDB2
USFCRSDC	RPL	FDBK2	EQU	RPLFDB2
USFCTN32	RPL	FDBK2	EQU	RPLFDB2
USFCWB	RPL	FDBK2	EQU	RPLFDB2
USFCWTOO	RPL	FDBK2	EQU	RPLFDB2
USFDAMGE	RPL	FDBK2	EQU	RPLFDB2
USFDFIBH	RPL	FDBK2	EQU	RPLFDB2
USFDFIPO	RPL	FDBK2	EQU	RPLFDB2
USFDIDIL	RPL	FDBK2	EQU	RPLFDB2
USFDIDOL	RPL	FDBK2	EQU	RPLFDB2
USFDISCO	RPL	FDBK2	EQU	RPLFDB2
USFDSTIU	RPL	FDBK2	EQU	RPLFDB2
USFDSTNO	RPL	FDBK2	EQU	RPLFDB2
USFDSTUO	RPL	FDBK2	EQU	RPLFDB2
USFDUPND	RPL	FDBK2	EQU	RPLFDB2
USFDVUNS	RPL	FDBK2	EQU	RPLFDB2
USFENVER	RPL	FDBK2	EQU	RPLFDB2
USFEWAU3	RPL	FDBK2	EQU	RPLFDB2
USFEWBLK	RPL	FDBK2	EQU	RPLFDB2
USFEWNS	RPL	FDBK2	EQU	RPLFDB2
USFEXRQ	RPL	FDBK2	EQU	RPLFDB2
USFEXRS	RPL	FDBK2	EQU	RPLFDB2
USFEXTAZ	RPL	FDBK2	EQU	RPLFDB2
USFEXTEZ	RPL	FDBK2	EQU	RPLFDB2
USFIACT	RPL	FDBK2	EQU	RPLFDB2
USFICNDN	RPL	FDBK2	EQU	RPLFDB2

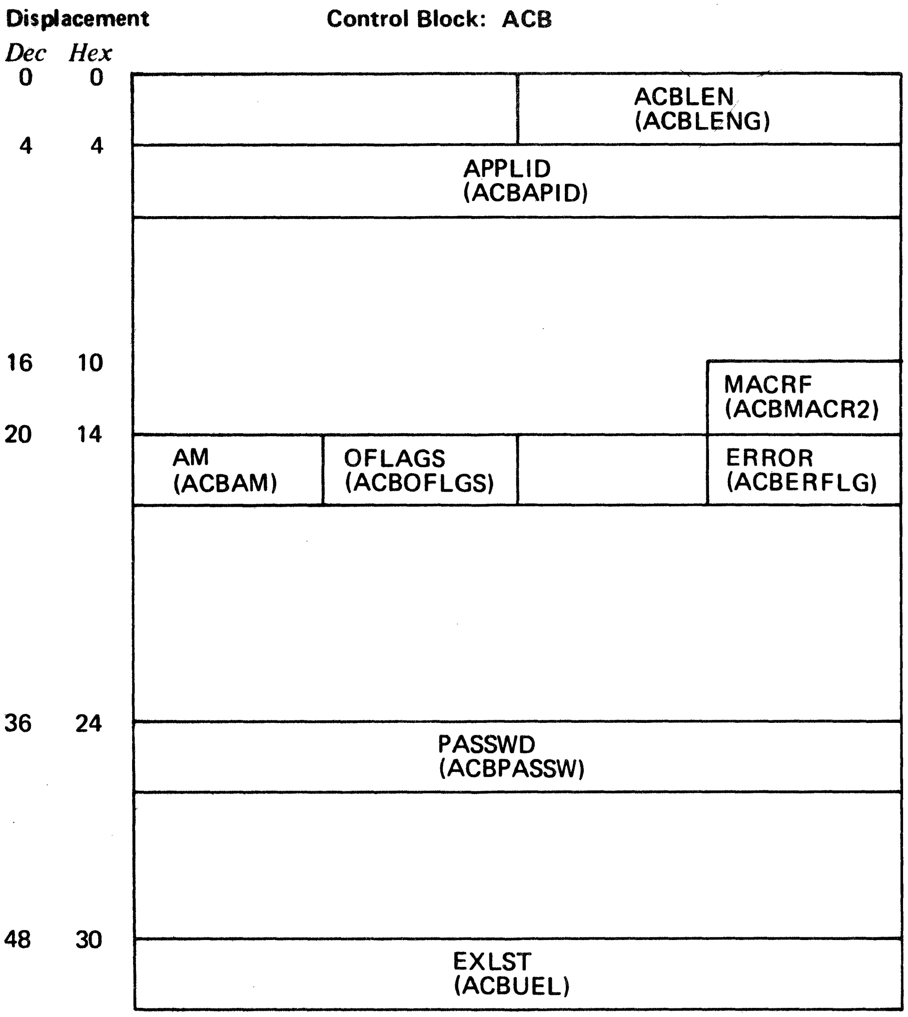
Figure H-1 (Part 7 of 9). Alphabetical List of Control Block Labels

DSECT Label	Control Block	Field Name	Type of Label	DS or ORG Label for EQU
USFIDA	RPL	FDBK2	EQU	RPLFDB2
USFIDAEL	RPL	FDBK2	EQU	RPLFDB2
USFIICBE	RPL	FDBK2	EQU	RPLFDB2
USFIIINA	RPL	FDBK2	EQU	RPLFDB2
USFIINA	RPL	FDBK2	EQU	RPLFDB2
USFILDOA	RPL	FDBK2	EQU	RPLFDB2
USFILDOP	RPL	FDBK2	EQU	RPLFDB2
USFILNBL	RPL	FDBK2	EQU	RPLFDB2
USFILRS	RPL	FDBK2	EQU	RPLFDB2
USFILSIN	RPL	FDBK2	EQU	RPLFDB2
USFINA	RPL	FDBK2	EQU	RPLFDB2
USFINTNA	RPL	FDBK2	EQU	RPLFDB2
USFINVAP	RPL	FDBK2	EQU	RPLFDB2
USFINVLA	RPL	FDBK2	EQU	RPLFDB2
USFINVMD	RPL	FDBK2	EQU	RPLFDB2
USFINVNB	RPL	FDBK2	EQU	RPLFDB2
USFINVOT	RPL	FDBK2	EQU	RPLFDB2
USFINVRM	RPL	FDBK2	EQU	RPLFDB2
USFINVRT	RPL	FDBK2	EQU	RPLFDB2
USFINVSL	RPL	FDBK2	EQU	RPLFDB2
USFIOEDU	RPL	FDBK2	EQU	RPLFDB2
USFIQUIE	RPL	FDBK2	EQU	RPLFDB2
USFIREST	RPL	FDBK2	EQU	RPLFDB2
USFITNA	RPL	FDBK2	EQU	RPLFDB2
USFJTOT	RPL	FDBK2	EQU	RPLFDB2
USFLGCNT	RPL	FDBK2	EQU	RPLFDB2
USFLIMEX	RPL	FDBK2	EQU	RPLFDB2
USFLIORP	RPL	FDBK2	EQU	RPLFDB2
USFMBHSS	RPL	FDBK2	EQU	RPLFDB2
USFMCNVD	RPL	FDBK2	EQU	RPLFDB2
USFMDINC	RPL	FDBK2	EQU	RPLFDB2
USFMDNAU	RPL	FDBK2	EQU	RPLFDB2
USFMFF	RPL	FDBK2	EQU	RPLFDB2
USFMT100	RPL	FDBK2	EQU	RPLFDB2
USFNCPAO	RPL	FDBK2	EQU	RPLFDB2
USFNLGFA	RPL	FDBK2	EQU	RPLFDB2
USFNOIN	RPL	FDBK2	EQU	RPLFDB2
USFNONVR	RPL	FDBK2	EQU	RPLFDB2
USFNOPAU	RPL	FDBK2	EQU	RPLFDB2
USFNORD	RPL	FDBK2	EQU	RPLFDB2
USFNOTAS	RPL	FDBK2	EQU	RPLFDB2
USFNPSAU	RPL	FDBK2	EQU	RPLFDB2
USFPCF	RPL	FDBK2	EQU	RPLFDB2
USFPREXC	RPL	FDBK2	EQU	RPLFDB2
USFQOPDC	RPL	FDBK2	EQU	RPLFDB2
USFQSCIE	RPL	FDBK2	EQU	RPLFDB2
USFRCDPR	RPL	FDBK2	EQU	RPLFDB2
USFRCINV	RPL	FDBK2	EQU	RPLFDB2
USFRCWNP	RPL	FDBK2	EQU	RPLFDB2
USFRECIP	RPL	FDBK2	EQU	RPLFDB2
USFRELNP	RPL	FDBK2	EQU	RPLFDB2
USFRESSU	RPL	FDBK2	EQU	RPLFDB2
USFREXAL	RPL	FDBK2	EQU	RPLFDB2
USFRILCP	RPL	FDBK2	EQU	RPLFDB2
USFRIOCC	RPL	FDBK2	EQU	RPLFDB2
USFRLGIC	RPL	FDBK2	EQU	RPLFDB2
USFRMD32	RPL	FDBK2	EQU	RPLFDB2
USFRNFT3	RPL	FDBK2	EQU	RPLFDB2
USFRNOCE	RPL	FDBK2	EQU	RPLFDB2
USFRNOCL	RPL	FDBK2	EQU	RPLFDB2
USFRNODA	RPL	FDBK2	EQU	RPLFDB2
USFRNOEL	RPL	FDBK2	EQU	RPLFDB2

Figure H-1 (Part 8 of 9). Alphabetical List of Control Block Labels

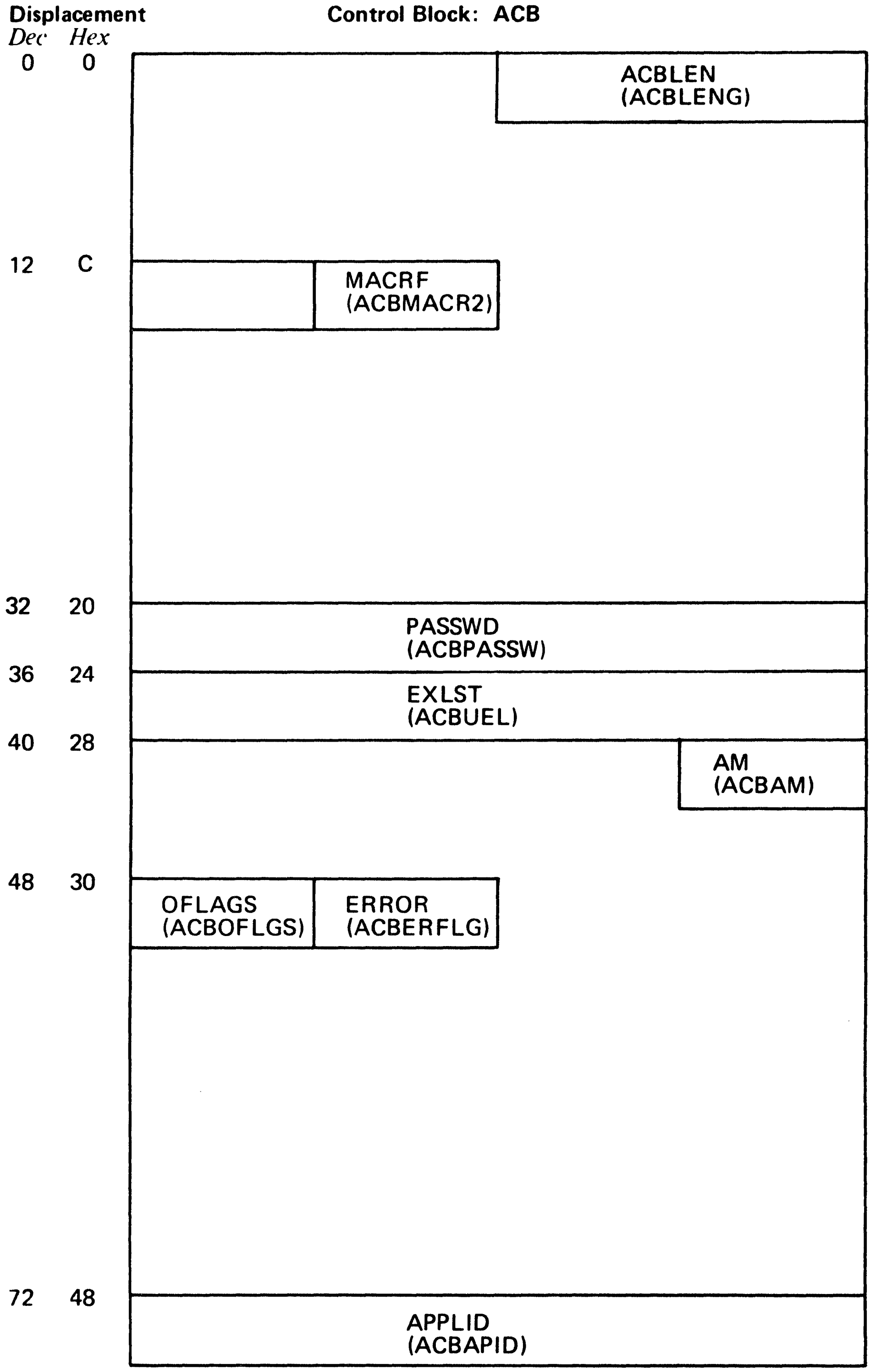
DSECT Label	Control Block	Field Name	Type of Label	DS or ORG Label for EQU
USFRNORT	RPL	FDBK2	EQU	RPLFDB2
USFRNOSE	RPL	FDBK2	EQU	RPLFDB2
USFRSCNC	RPL	FDBK2	EQU	RPLFDB2
USFRSCNO	RPL	FDBK2	EQU	RPLFDB2
USFRTOOD	RPL	FDBK2	EQU	RPLFDB2
USFRTRAF	RPL	FDBK2	EQU	RPLFDB2
USFRVIRC	RPL	FDBK2	EQU	RPLFDB2
USFSBFAL	RPL	FDBK2	EQU	RPLFDB2
USFSCEF	RPL	FDBK2	EQU	RPLFDB2
USFSCEM	RPL	FDBK2	EQU	RPLFDB2
USFSDFR	RPL	FDBK2	EQU	RPLFDB2
USFSDNP	RPL	FDBK2	EQU	RPLFDB2
USFSINVC	RPL	FDBK2	EQU	RPLFDB2
USFSINVR	RPL	FDBK2	EQU	RPLFDB2
USFSINVS	RPL	FDBK2	EQU	RPLFDB2
USFSNOS	RPL	FDBK2	EQU	RPLFDB2
USFSNOUT	RPL	FDBK2	EQU	RPLFDB2
USFSNQC	RPL	FDBK2	EQU	RPLFDB2
USFSSEQ	RPL	FDBK2	EQU	RPLFDB2
USFSTALF	RPL	FDBK2	EQU	RPLFDB2
USFSTOOD	RPL	FDBK2	EQU	RPLFDB2
USFSYERR	RPL	FDBK2	EQU	RPLFDB2
USFSYMNU	RPL	FDBK2	EQU	RPLFDB2
USFTANAV	RPL	FDBK2	EQU	RPLFDB2
USFTAPUA	RPL	FDBK2	EQU	RPLFDB2
USFUNTRM	RPL	FDBK2	EQU	RPLFDB2
USFUSELE	RPL	FDBK2	EQU	RPLFDB2
USFUSRES	RPL	FDBK2	EQU	RPLFDB2
USFUTSRC	RPL	FDBK2	EQU	RPLFDB2
USFVOFOC	RPL	FDBK2	EQU	RPLFDB2
USFVTBFO	RPL	FDBK2	EQU	RPLFDB2
USFVTHAL	RPL	FDBK2	EQU	RPLFDB2
USFVTMNA	RPL	FDBK2	EQU	RPLFDB2
USFWANCR	RPL	FDBK2	EQU	RPLFDB2
USFWCNVR	RPL	FDBK2	EQU	RPLFDB2
USFWTOI	RPL	FDBK2	EQU	RPLFDB2
USFXORDC	RPL	FDBK2	EQU	RPLFDB2
USFYTCTN	RPL	FDBK2	EQU	RPLFDB2
USFYTCTL	RPL	FDBK2	EQU	RPLFDB2

Figure H-1 (Part 9 of 9). Alphabetical List of Control Block Labels



The names in parentheses are the labels for the ACB's DSECT (IFGACB)

Figure H-2. The Format of the DOS/VS ACB



The names in parentheses are the labels for the ACB's DSECT (IFGACB)

Figure H-3. The Format of the OS/VS ACB

ACB DSECT: IFGACB

Field	DSECT DS or ORG label	DSECT EQU label	Value	Meaning (For EQU, meaning when bit setting is on or when byte value is set)	DOS/VS Displacement		OS/VS Displacement	
					Dec	Hex	Dec	Hex
ACBLEN	ACBLENG	–	–	ACB length	2	2	2	2
AM	ACBAM	ACBVTAM	X'60'	AM=VTAM (after OPEN)	20	14	43	2B
APPLID	ACBAPID	–	–	APPLID address	4	4	72	48
ERROR	ACBERFLG	ACBOALR	X'04'	Already open (OPEN)	23	17	49	31
		ACBCALR	X'04'	Already closed (CLOSE)				
		ACBONVP	X'14'	Not enough storage (OPEN) (OS/VS only)				
			X'24'	Incorrect password (OPEN)				
		ACBBUSY	X'30'	ACB busy				
		ACBCAQNR	X'40'	Outstanding ACQUIRES not released				
		ACBDSN	X'42'	Some connections not released (CLOSE)				
		ACBNMAIN	X'46'	OPEN/CLOSE not in mainline				
		ACBRNOCF	X'4C'	Messages are queued or ACF/VTAM is waiting for a reply (CLOSE)				
		ACBOANAT	X'50'	ACF/VTAM not specified during system generation				
		ACBOAHLT	X'52'	ACF/VTAM is halting (OPEN)				
		ACBOAVFY	X'54'	APPLID is invalid (OPEN)				
		ACBOANSN	X'56'	APPLID is name of non-APPL (OPEN)				
		ACBOAPAA	X'58'	APPL is already active (OPEN)				
		ACBOAPNM	X'5A'	No matching APPL found (OPEN)				
		ACBOVINA	X'5C'	ACF/VTAM in system but inactive				
		ACBOAPSE	X'5E'	APPLID not in requestor's space				
		ACBOUNDF	X'60'	Undefined system error				
		ACBOAPLE	X'62'	APPLID length too small				
		ACBOPWSE	X'64'	Password not in requestor's space				
		ACBOPWLE	X'66'	Password length invalid				
		ACBRNOOF	X'68'	Primary program already active (OPEN)				
		ACBAPNDP	X'70'	CLOSE rejected; program is being abended				
		ACBTVTCL	X'70'	OPEN rejected; application program is being closed and is unavailable				
		ACBONVRT	X'88'	Not enough storage (OPEN)(DOS/VS only)				
		ACBOACT	X'BC'	ACB active				
		ACBCBUSY	X'BC'	ACB BUSY				
EXLST	ACBUEL	–	–	EXLST address	48	30	36	24
MACRF	ACBMACR2	ACBLOGON	X'08'	MACRF=NLOGON	19	13	13	D
OFLAGS	ACBOFLGS	ACBOPEN	X'10'	OFLAGS=OPEN	21	15	48	30
PASSWD	ACBPASSW	–	–	Password value	36	24	32	20

Figure H-4. The DOS/VS and OS/VS ACB DSECT (IFGACB)

Displacement Control Block: EXLST

Dec	Hex				
0	0			EXLLEN (EXLLEN2)	
4	4				
8	8			SYNAD attributes (EXLSYNF)	SYNAD address (EXLSYNP)
12	C	SYNAD address (EXLSYNP cont'd)			LERAD attributes (EXLLERF)
16	10	LERAD address (EXLLERP)			
20	14	SCIP attributes (EXLSCIPF)	SCIP address (EXLSCIPP)		
24	18	SCIP address (EXLSYNP cont'd)	LOGON attributes (EXLLGNF)	LOGON address (EXLLGNP)	
28	1C	LOGON address (EXLLGNP cont'd)		DFASY attributes (EXLDFASF)	DFASY address (EXLDFASF)
32	20	DFSAY address (EXLDFASF cont'd)			RESP attributes (EXLRESPF)
36	24	RESP address (EXLRESPP)			
40	28	LOSTERM attributes (EXLNLGNF)	LOSTERM address (EXLNLGNP)		
44	2C	LOSTERM address (EXLNLGNP cont'd)	RELREQ attributes (EXLRLRQF)	RELREQ address (EXLRLRQP)	
48	30	RELREQ address (EXLRLRQP cont'd)			
52	34				ATTN attributes (EXLATTNF)
56	38	ATTN address (EXLATTNP)			
60	3C	TPEND address (EXLTPNDF)	TPEND address (EXLTPNDP)		
64	40	TPEND address (EXLTPNDF cont'd)	NSEXIT address (EXLTNSEF)	NSEXIT address (EXLTNSEP)	
		NSEXIT address (EXLTNSEP cont'd)			

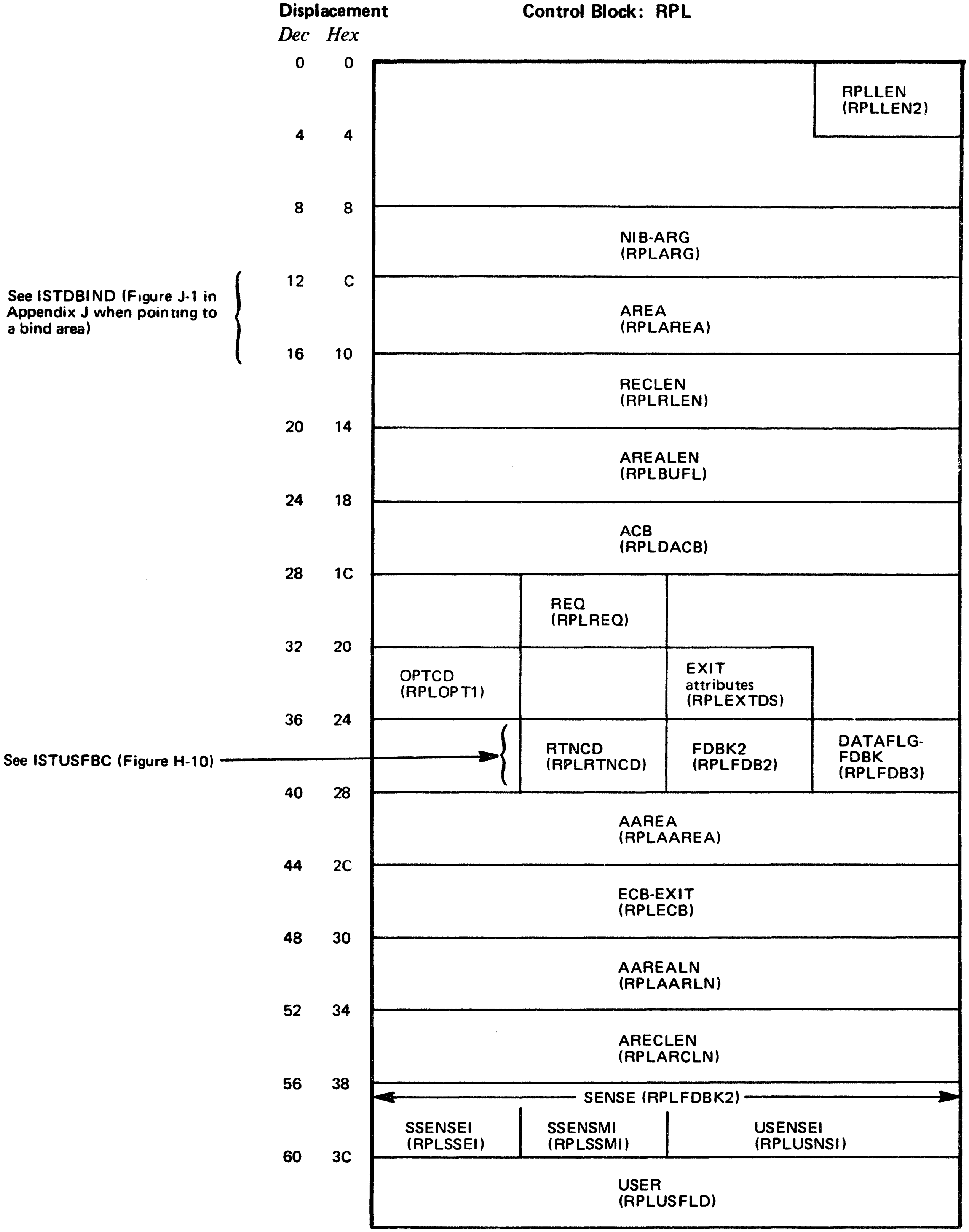
The names in the parentheses are the labels for the EXLST's DSECT (IFGEXLST)

Figure H-5. The Format of the DOS/VS and OS/VS EXLST

EXLST DSECT: IFGEXLST

Field	*DSECT DS or ORG label*	*DSECT EQU label*	*Value*	*Meaning (For EQU, meaning when bit setting is on or when byte value is set)*	*OS/VS or DOS/VS Displacement*	
					Dec	*Hex*
ATTN	EXLATTNF	EXLATTNS	X‘80’	ATTN exit present	55	37
	EXLATTNP	–	–	ATTN exit address	56	38
DFASY	EXLDFASF	EXLDFASS	X‘80’	DFASY exit present	30	1E
	EXLDFASP	–	–	DFASY exit address	31	1F
EXLLEN	EXLLEN2	–	–	EXLST length	2	2
LERAD	EXLLERF	EXLLERS	X‘80’	LERAD exit present	15	F
	EXLLERP	–	–	LERAD exit address	16	10
LOGON	EXLLGNF	EXLLGNS	X‘80’	LOGON exit present	25	19
	EXLLGNP	–	–	LOGON exit address	26	1A
LOSTERM	EXLNLGNF	EXLNLGNS	X‘80’	LOSTERM exit present	40	28
	EXLNLGNP	–	–	LOSTERM exit address	41	29
NSEXIT	EXLTNSEF	EXLTNSES	X'80’	NSEXIT exit present	65	41
	EXLTNSEP			NSEXIT exit address	66	42
RELREQ	EXLRLRQF	EXLRLRQS	X‘80’	RELREQ exit present	45	2D
	EXLRLRQP	–	–	RELREQ exit address	46	2E
RESP	EXLRESPF	EXLRESPS	X‘80’	RESP exit present	35	23
	EXLRESPP	–	–	RESP exit address	36	24
SCIP	EXLSCIPF	EXLSCIPS	X‘80’	SCIP exit present	20	14
	EXLSCIPP	–	–	SCIP exit address	21	15
SYNAD	EXLSYNF	EXLSYNS	X‘80’	SYNAD exit present	10	A
	EXLSYNP	–	–	SYNAD exit address	11	B
TPEND	EXLTPNDF	EXLTPNDS	X‘80’	TPEND exit present	60	3C
	EXLTPNDP	–	–	TPEND exit address	61	3D

Figure H-6. The DOS/VS and OS/VS EXLST DSECT (IFGEXLST)



Displacement Dec	Displacement Hex	Control Block: RPL			
0	0				RPLLEN (RPLLEN2)
4	4				
8	8	NIB-ARG (RPLARG)			
12	C	AREA (RPLAREA)			
16	10	RECLEN (RPLRLEN)			
20	14	AREALEN (RPLBUFL)			
24	18	ACB (RPLDACB)			
28	1C		REQ (RPLREQ)		
32	20	OPTCD (RPLOPT1)		EXIT attributes (RPLEXTDS)	
36	24		RTNCD (RPLRTNCD)	FDBK2 (RPLFDB2)	DATAFLG-FDBK (RPLFDB3)
40	28	AAREA (RPLAAREA)			
44	2C	ECB-EXIT (RPLECB)			
48	30	AAREALN (RPLAARLN)			
52	34	ARECLEN (RPLARCLN)			
56	38	SENSE (RPLFDBK2)			
		SSENSEI (RPLSSEI)	SSENSMI (RPLSSMI)	USENSEI (RPLUSNSI)	
60	3C	USER (RPLUSFLD)			

See ISTDBIND (Figure J-1 in Appendix J when pointing to a bind area)

See ISTUSFBC (Figure H-10)

Figure H-7 (Part 1 of 2). The Format of the DOS/VS RPL

Displacement *Dec*	 *Hex*	Control Block: RPL (Cont.)			
64	40	OPTCD (RPLOPT5)	OPTCD (RPLOPT6)	OPTCD (RPLOPT7)	OPTCD (RPLOPT8)
68	44	OPTCD (RPLOPT9)	OPTCD (RPLOPT10)	OPTCD (RPLOPT11)	OPTCD (RPLOPT12)
72	48	BRACKET-CHNGDIR-CODESEL (RPLRH3)	STYPE-RTYPE (RPLSRTYP)		POST-RESPOND (RPLVTFL2)
76	4C	CHAIN (RPLCHN)	CONTROL(1) (RPLCNTDF)	CONTROL(2) (RPLCNTDC)	CONTROL(3) (RPLCNTSC)
80	50	OBSQVAL (RPLOBSQV)		IBSQVAL (RPLIBSQV)	
84	54	OBSQAC (RPLOBSQ)	IBSQAC (RPLIBSQ)	SEQNO (RPLSEQNO)	
88	58	SSENSEO (RPLSSEO)	SSENSMO (RPLSSMO)	USENSEO (RPLUSNSO)	
92	5C	CHECK (RPLACTIV)			
96	60	SIGDATA (RPLSIGDA)			

The names in parentheses are the labels for the RPL's DSECT (IFGRPL)

Figure H-7 (Part 2 of 2). The Format of the DOS/VS RPL

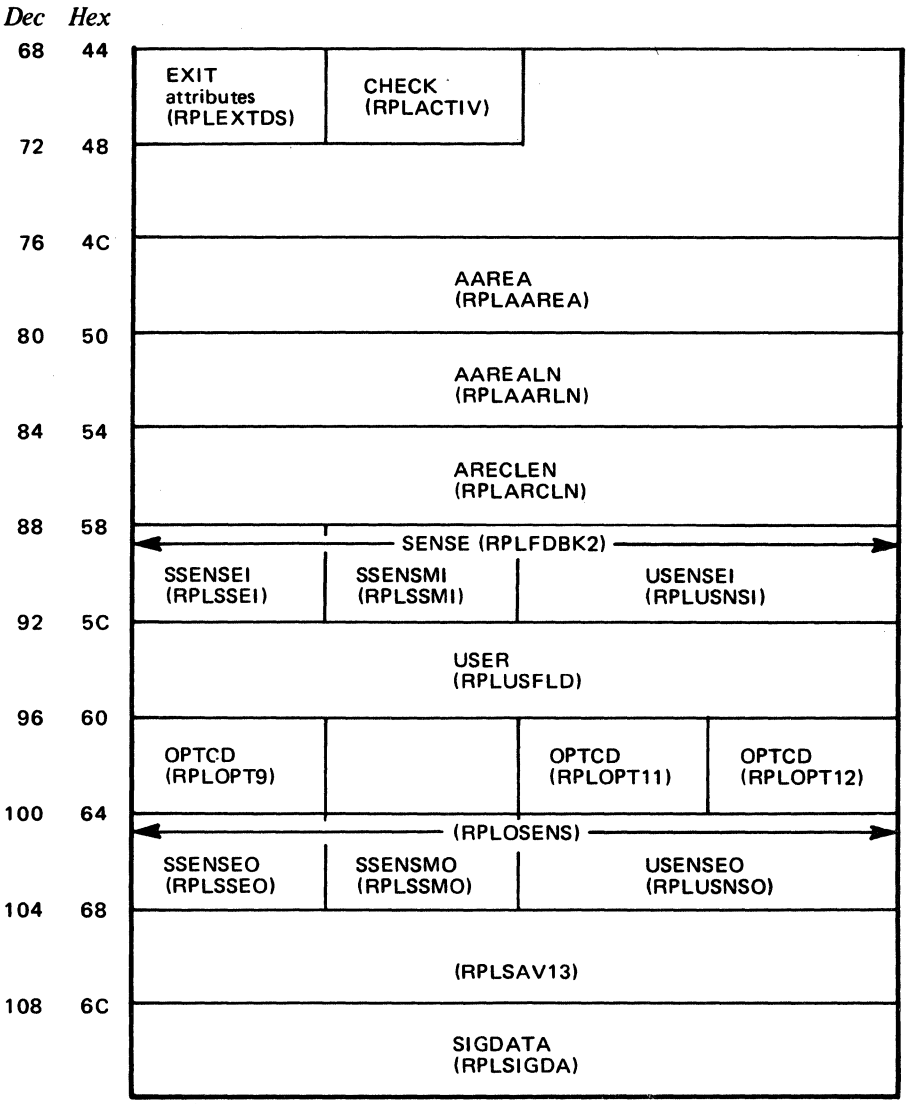
Control Block: RPL

See ISTUSFBC (Figure H-10)

Displacement Dec	Displacement Hex				
0	0			REQ (RPLREQ)	RPLLEN (RPLLEN2)
4	4				
8	8	ECB-EXIT (RPLECB)			
12	C		← (RPLFDBK) →		
			RTNCD (RPLRTNCD)	FDBK2 (RPLFDB2)	DATAFLG-FDBK (RPLFDB3)
16	10	BRACKET-CHNGDIR-CODESEL (RPLRH3)	STYPE-RTYPE (RPLSRTYP)	CHAIN (RPLCHN)	
20	14	POST-RESPOND (RPLVTFL2)	← CONTROL (RPLCNTRL) →		
			(RPLCNTDF)	(RPLCHTDC)	(RPLCNTSC)
24	18	ACB (RPLDACB)			
28	1C				
32	20	AREA (RPLAREA)			
36	24	NIB-ARG (RPLARG)			
40	28	OPTCD (RPLOPT1)			
44	2C				
48	30	RECLEN (RPLRLEN)			
52	34	AREALEN (RPLBUFL)			
56	38	OPTCD (RPLOPT5)	OPTCD (RPLOPT6)	OPTCD (RPLOPT7)	OPTCD (RPLOPT8)
60	3C	OBSQVAL (RPLOBSQV)		IBSQVAL (RPLIBSQV)	
64	40	OBSQAC (RPLOBSQ)	IBSQAC (RPLIBSQ)	SEQNO (RPLSEQNO)	

Figure H-8 (Part 1 of 2). The Format of the OS/VS RPL

Displacement **Control Block: RPL (Cont.)**



Dec	Hex				
68	44	EXIT attributes (RPLEXTDS)	CHECK (RPLACTIV)		
72	48				
76	4C	AAREA (RPLAAREA)			
80	50	AAREALN (RPLAARLN)			
84	54	ARECLEN (RPLARCLN)			
88	58	SENSE (RPLFDBK2) SSENSEI (RPLSSEI)	SSENSMI (RPLSSMI)	USENSEI (RPLUSNSI)	
92	5C	USER (RPLUSFLD)			
96	60	OPTCD (RPLOPT9)		OPTCD (RPLOPT11)	OPTCD (RPLOPT12)
100	64	(RPLOSENS) SSENSEO (RPLSSEO)	SSENSMO (RPLSSMO)	USENSEO (RPLUSNSO)	
104	68	(RPLSAV13)			
108	6C	SIGDATA (RPLSIGDA)			

The names in parentheses are the labels for the RPL's DSECT(IFGRPL)

Figure H-8 (Part 2 of 2). The Format of the OS/VS RPL

RPL DSECT: IFGRPL

Field	*DSECT DS or ORG label*	*DSECT EQU label*	*Value*	*Meaning (For EQU, meaning when bit setting is on or when byte value is set)*	*DOS/VS Displacement*		*OS/VS Displacement*	
					Dec	*Hex*	*Dec*	*Hex*
AAREA	RPLAAREA	–	–	AAREA address	40	28	76	4C
AAREALN	RPLAARLN	–	–	AAREALEN value	48	30	80	50
ACB	RPLDACB	–	–	ACB address	24	18	24	18
AREA	RPLAREA	–	–	AREA address	12	C	32	20
AREALEN	RPLBUFL	–	–	AREALEN value	20	14	52	34
ARECLEN	RPLARCLN	–	–	ARECLEN value	52	34	84	54
BRACKET	RPLRH3	RPLBB	X‘80’	BRACKET=BB	72	48	16	10
		RPLEB	X‘40’	BRACKET=EB				
BRANCH	RPLEXTDS	RPLBRANC	X‘02’	BRANCH=YES	34	22	68	44
CHAIN	RPLCHN	RPLFIRST	X‘80’	CHAIN=FIRST	76	4C	18	12
		RPLMIDLE	X‘40’	=MIDDLE				
		RPLLAST	X‘20’	=LAST				
		RPLONLY	X‘10’	=ONLY				
CHECK	RPLEXTDS	RPLEXSCH	X‘80’	RPL exit has been entered	34	22	68	44
	RPLACTIV	–	X‘FF’	RPL is active	92	5C	69	45
	RPLECB	RPLPOST	X‘40’	Internal ECB has been posted	–	–	8	8
	RPLECB+2	RPLPOST	X‘80’	Internal ECB has been posted	46	2E	–	–
CHNGDIR	RPLRH3	RPLCMD	X‘20’	CHNGDIR=CMD	72	48	16	10
		RPLCHREQ	X‘10’	CHNGDIR=REQ				
CODESEL	RPLRH3	RPLCSI	X‘08’	CODESEL=ALT	77	48	–	–
CONTROL	RPLCNTDF	RPLDATA	X‘80’	CONTROL=DATA	77	4D	21	15
(all settings		RPLCNCEL	X‘40’	=CANCEL				
mutually		RPLQC	X‘20’	=QC				
exclusive)		RPLQEC	X‘10’	=QEC				
		RPLCHASE	X‘08’	=CHASE				
		RPLRELQ	X‘04’	=RELQ				
	RPLCNTDC	RPLBID	X‘80’	=BID	78	4E	22	16
		RPLRTR	X‘40’	=RTR				
		RPLLUS	X‘20’	=LUS				
		RPLSIGNL	X‘10’	=SIGNAL				
		RPLTBIND	X‘08’	=BIND				
		RPLTUNBD	X‘04’	=UNBIND				
		RPLSBI	X‘02’	=SBI				
		RPLBIS	X‘01’	=BIS				
	RPLCNTSC	RPLSDT	X‘80’	=SDT	79	4F	23	17
		RPLCLEAR	X‘40’	=CLEAR				
		RPLSTSN	X‘20’	=STSN				
		RPLSHUTD	X’10’	=SHUTD				
		RPLSHUTC	X‘08’	=SHUTC				
		RPLRQR	X‘04’	=RQR				
		RPLRSHUT	X‘02’	=RSHUTD				
CRYPT	RPLEXTDS	RPLTCRYP	X‘08’	CRYPT =YES	-	-	68	44
ECB	RPLOPT1	RPLECBIN	X‘01’	ECB is external to the RPL	32	20	40	28
ECB-EXIT	RPLECB	–	–	ECB, ECB address, or EXIT address	44	2C	8	8
EXIT	RPLEXTDS	RPLNEXIT	X‘40’	No RPL exit specified	34	22	68	44
		RPLEXIT	X‘20’	RPL exit specified				
FDBK2	RPLFDB2			FDBK2 return code (see Figure H-10)	38	26	14	E
FDBK- DATAFLG	RPLFDB3	RPLUINPT	X‘80’	DATAFLG=UNSOL	39	27	15	F
		RPLREOB	X‘20’	=EOB				
		RPLREOM	X‘10’	=EOM				
		RPLREOT	X‘08’	=EOT				
		RPLRLG	X‘02’	=LG				
		RPLRDSOH	X‘01’	=SOH				
IBSQAC	RPLIBSQ	RPLISET	X‘80’	IBSQAC=SET	85	55	65	41
		RPLITST	X‘40’	=TESTSET				

Figure H-9 (Part 1 of 3). The DOS/VS and OS/VS RPL DSECT (IFGRPL)

Field	DSECT DS or ORG label	DSECT EQU label	Value	Meaning (For EQU, meaning when bit setting is on or when byte value is set)	DOS/VS Displacement Dec	DOS/VS Displacement Hex	OS/VS Displacement Dec	OS/VS Displacement Hex
		RPLIRSET	X'20'	=RESET				
		RPLIIGN	X'10'	=IGNORE				
		RPLIPOS	X'08'	=TESTPOS				
		RPLINEG	X'04'	=TESTNEG				
		RPLIINV	X'02'	=INVALID				
IBSQVAL	RPLIBSQV	–	–	IBSQVAL value	82	52	68	3E
NIB-ARG	RPLEXTDS	RPLNIB	X'04'	RPLARG points to a NIB	34	22	68	44
	RPLARG			address or CID	8	8	36	24
OBSQAC	RPLOBSQ	RPLOSET	X'80'	OBSQAC=SET	84	54	64	40
		RPLOTST	X'40'	=TESTSET				
		RPLORSET	X'20'	=RESET				
		RPLOIGN	X'10'	=IGNORE				
		RPLOPOS	X'08'	=TESTPOS				
		RPLONEG	X'04'	=TESTNEG				
		RPLOINV	X'02'	=INVALID				
OBSQVAL	RPLOBSQV	–	–	OBSQVAL value	80	50	60	3C
OPTCD	RPLOPT1	RPLASY	X'08'	OPTCD=ASY	32	20	40	28
	RPLOPT5	RPLDLGIN	X'80'	OPTCD=CS	64	40	56	38
		RPLPSOPT	X'20'	OPTCD=PASS				
		RPLNERAS	X'10'	OPTCD=NERASE				
		RPLEAU	X'08'	=EAU				
		RPLERACE	X'04'	=ERASE				
		RPLNODE	X'02'	OPTCD=ANY				
		RPLWROPT	X'01'	OPTCD=CONV				
	RPLOPT6	RPLEOB	X'80'	OPTCD=BLK	65	41	57	39
		RPLEOM	X'40'	=LBM				
		RPLEOT	X'20'	=LBT				
		RPLCOND	X'10'	OPTCD=COND				
		RPLNCOND	X'08'	=UNCOND				
		RPLLOCK	X'04'	=LOCK				
	RPLOPT7	RPLCNALL	X'80'	OPTCD=CONALL	66	42	58	3A
		RPLCNANY	X'40'	=CONANY				
		RPLQOPT	X'10'	OPTCD=Q				
		RPLRLSOP	X'04'	OPTCD=RELRQ				
	RPLOPT8	RPLODACQ	X'80'	OPTCD=ACQUIRE	67	43	59	3B
		RPLODACP	X'40'	=ACCEPT				
	RPLOPT9	RPLLOGON	X'80'	OPTCD=LOGONMSG	68	44	96	60
		RPLDEVCH	X'40'	=DEVCHAR				
		RPLTERMS	X'20'	=TERMS				
		RPLCOUNT	X'10'	=COUNTS				
		RPLAPPST	X'08'	=APPSTAT				
		RPLCIDE	X'02'	=CIDXLATE				
		RPLTOPL	X'01'	=TOPLOGON				
	RPLOPT10	RPLBSCID	X'80'	OPTCD=BSCID	69	45		
		RPLDSPLY	X'40'	=DISPLAY				
		RPLSPARM	X'20'	=SESSPARM				
		RPLTSKY	X'10'	=SESSKEY				
	RPLOPT11	RPLQUIES	X'80'	OPTCD=QUIESCE	70	46	98	62
		RPLSTART	X'40'	=START				
		RPLSTOP	X'20'	=STOP				
	RPLOPT12	RPLKEEP	X'40'	OPTCD=KEEP	71	47	99	63
		RPLTRUNC	X'20'	=TRUNC				
		RPLNIBTK	X'10'	=NIBTK				
		RPLFMHDR	X'01'	=FMHDR				
POST	RPLVTFL2	RPLSCHED	X'80'	POST=SCHED	75	4B	20	14
RECLEN	RPLRLEN	–	–	RECLEN value	16	10	48	30
REQ	RPLREQ	RPLWRITE	X'11'	WRITE	29	1D	2	2
		RPLRESET	X'12'	RESET				

Figure H-9 (Part 2 of 3). The DOS/VS and OS/VS RPL DSECT (IFGRPL)

Field	*DSECT DS or ORG label*	*DSECT EQU label*	*Value*	*Meaning (For EQU, meaning when bit setting is on or when byte value is set)*	*DOS/VS Displacement Dec*	*DOS/VS Displacement Hex*	*OS/VS Displacement Dec*	*OS/VS Displacement Hex*
REQ	RPLREQ	RPLDO	X'13'	DO	29	1D	2	2
		RPLQUISE	X'15'	SETLOGON				
		RPLSMLGO	X'16'	SIMLOGON				
		RPLOPNDS	X'17'	OPNDST				
		RPLCHNG	X'19'	CHANGE				
		RPLINQIR	X'1A'	INQUIRE				
		RPLINTPT	X'1B'	INTRPRET				
		RPLREAD	X'1D'	READ				
		RPLSLICT	X'1E'	SOLICIT				
		RPLCLOSE	X'1F'	CLSDST				
		RPLCLACB	X'21'	CLOSE				
		RPLSNDCD	X'22'	SEND				
		RPLRCVCD	X'23'	RECEIVE				
		RPLRSRCD	X'24'	RESETSR				
		RPLSSCCD	X'25'	SESSIONC				
		RPLSDCMD	X'27'	SENDCMD				
		RPLRVCMD	X'28'	RCVCMD				
		RPLTREQ	X'29'	REQSESS				
		RPLTOPNS	X'2A'	OPNSEC				
		RPLTRMS	X'2C'	TERMSESS				
RESPOND	RPLVTFL2	RPLQRI	X'08'	RESPOND=QRESP	75	4B	20	14
		RPLEX	X'04'	RESPOND=EX				
		RPLNFME	X'02'	RESPOND=NFME				
		RPLRRN	X'01'	RESPOND=RRN				
RPLLEN	RPLLEN2	–	–	RPL length	3	3	3	3
RPLSAV13	RPLSAV13	–	–	Save area (OS/VS only)			104	68
RTNCD	RPLRTNCD	ISTUSFBC		(See Figure H-10)	37	25	13	D
RTYPE	RPLSRTYP	RPLRRESP	X'08'	RTYPE=RESP	73	49	17	11
		RPLNFSYN	X'04'	RTYPE=NDFSYN				
		RPLDFASY	X'02'	RTYPE=DFASY				
SENSE	RPLFDBK2	–	–	BASIC mode input sense (BSC S/S)	56	38	88	58
	RPLFDBK2+2	–	–	NCP return codes (2 bytes)	58	3A	90	5A
SEQNO	RPLSEQNO	–	–	SEQNO value	86	56	66	42
SIGDATA	RPLSIGDA	–	–	Signal data	96	60	108	60
SSENSEI	RPLSSEI	RPLPATHI	X'80'	SSENSEI=PATH	56	38	88	58
		RPLCPMI	X'40'	=CPM				
		RPLSTATI	X'20'	=STATE				
		RPLFII	X'10'	=FI				
		RPLRRI	X'08'	=RR				
SSENSLO	RPLSSLO	RPLCPMO	X'40'	SSENSEO=CPM	88	58	100	64
		RPLSTATO	X'20'	=STATE				
		RPLFIO	X'10'	=FI				
		RPLRRO	X'08'	=RR				
SSENSMI	RPLSSMI			System sense modifier value	57	39	89	59
SSENSMO	RPLSSMO			System sense modifier value (outgoing)	89	59	101	65
STYPE	RPLSRTYP	RPLSRESP	X'80'	STYPE=RESP	73	49	17	11
USENSEI	RPLUSNSI	–	–	USENSEI value	58	3A	90	5A
USENSEO	RPLUSNSO	–	–	USENSEO value	90	5A	102	66
USER	RPLUSFLD	–	–	USER value	60	3C	92	5C

Figure H-9 (Part 3 of 3). The DOS/VS and OS/VS RPL DSECT (IFGRPL)

RTNCD-FDBK-FDBK2 DSECT: ISTUSFBC

Field	*DSECT DS or ORG label*	*DSECT EQU label*	*Value*	*Meaning (For EQU, meaning when bit setting is on or when byte value is set)*	*OS/VS or DOS/VS Displacement*	
					Dec	*Hex*
				The following byte values apply to the RTNCD field (RPLRTNCD in the IFGRPL DSECT):		
		USFAOK	X'00'	Normal or conditional completion		
		USFXORDC	X'04'	Extraordinary completion		
		USFRESSU	X'08'	Retriable-Reissue		
		USFDAMGE	X'0C'	Damage		
		USFENVER	X'10'	Environment error		
		USFLOGIC	X'14'	User logic error		
		USFRLGIC	X'18'	(Should not occur)		
				The following byte values apply to the FDBK2 field (RPLFDB2 in the IFGRPL DSECT) when RTNCD is set to X'00':		
		USFAOOK	X'00'	Normal completion		
		USFRCWNP	X'01'	RESET (COND) issued with I/O in progress		
		USFRCDPR	X'02'	Normal completion with data		
		USFYTCTN	X'03'	Yielded to contention		
		USFYTCTL	X'04'	Yielded to contention, error lock set		
		USFATSFI	X'05'	Input area too small		
		USFNOIN	X'06'	No input available		
		USFIIINA	X'07'	INQUIRE information not available		
		USFDSTIU	X'08'	Terminal in use		
		USFNLGFA	X'09'	No logon requests		
				The following byte values apply when RTNCD is set to X'04':		
		USFRVIRC	X'00'	RVI received		
		USFATNRC	X'01'	Attention or reverse break received		
		USFBSCSM	X'02'	SENSE field set		
		USFEXRQ	X'03'	Exception condition for incoming message		
		USFEXRS	X'04'	Incoming response indicates exception condition		
				The following byte value applies when RTNCD is set to X'08':		
		USFSTALF	X'00'	Temporary storage shortage		
				The following byte values apply when RTNCD is set to X'0C':		
		USFIOEDU	X'00'	Error lock set		
		USFDVUNS	X'01'	Terminal not usable		
		USFUNTRM	X'02'	Request canceled by RFT		
		USFBTHEX	X'03'	Buffers now emptied		
		USFBTEOR	X'04'	Buffers filled		
		USFNCPAO	X'05'	NCP abended, restart successful		
		USFLIORP	X'06'	NCP abended, restart successful (Final I/O request)		
		USFRECIP	X'07'	Connection recovery in progress		
		USFRTRAF	X'08'	Logical unit restarted		
		USFQOPDC	X'09'	Queued OPNDST canceled by CLSDST		
		USFUSRES	X'0A'	Request canceled by RESET or RESETSR		

Figure H-10 (Part 1 of 4). The RPL's RTNCD-FDBK-FDBK2 DSECT (ISTUSFBC)

Field	DSECT DS or ORG label	DSECT EQU label	Value	Meaning (For EQU, meaning when bit setting is on or when byte value is set)	OS/VS or DOS/VS Displacement	
					Dec	Hex
		USFCLOCC	X‘0B’	Request canceled by CLSDST		
		USFCLRED	X‘0C’	Request canceled by clear indicator		
		USFPREXC	X‘0D’	SEND canceled due to prior exception condition		
				The following byte values apply when RTNCD is set to X‘10’		
		USFTANAV	X‘00’	Terminal or APPL not available		
		USFSBFAL	X‘01’	OPNDST failed for logical unit		
		USFTAPUA	X‘02’	APPL does not accept logon requests		
		USFVTHAL	X‘03’	HALT (quick) issued		
		USFILRS	X‘04’	ACF/VTAM-NCP incompatibility		
		USFPCF	X‘05’	Permanent channel failure		
		USFANS	X‘06’	Automatic NCP shutdown		
		USFVOFOC	X‘07’	Request canceled by VARY command		
		USFDISCO	X‘08’	Dial-line disconnection		
		USFUTSCR	X‘09’	Unconditional terminate self received		
		USFSYERR	X‘0A’	ACF/VTAM error		
		USFDIDOL	X‘0B’	Dial-out disconnection		
		USFDIDIL	X‘0C’	Dial-in disconnection		
		USFVTMNA	X‘0D’	ACF/VTAM inactive for APPL		
		USFABNDO	X‘0E’	Abend for APPL’s TCB		
		USFVTBFO	X‘0F’	Buffers filled for record devices		
		USFCTERM	X‘10’	Terminate request received		
		USFOSDTF	X‘11’	SDT failure on OPNDST		
		USFMFF	X‘12’	Macro function failed, sense included		
				The following byte values apply when RTNCD is set to X’14’:		
		USFNONVR	X‘00’	VSAM request		
		USFNOTAS	X‘01’	Reserved		
		USFEXTAZ	X‘02’	Zero EXIT field		
		USFEXTEZ	X‘03’	Zero ECB field		
		USFCRPLN	X‘04’	Inactive RPL checked		
		USFCBERR	X‘10’	Control block invalid		
		USFRNORT	X‘11’	RTYPE invalid for RECEIVE		
		USFCLSIP	X‘12’	CLSDST in progress		
		USFCIDNG	X‘13’	CID invalid		
		USFILDOP	X‘14’	CMD field invalid		
		USFWANCR	X‘15’	READ LDO not chained		
		USFSTOOD	X‘16’	SOLICIT for output-only terminal		
		USFRTOOD	X‘17’	READ for output-only terminal		
		USFWTOI	X‘18’	WRITE for input-only terminal		
		USFEWNS	X‘19’	WRITE ERASE for invalid terminal		
		USFEWAU3	X‘1A’	WRITE EAU for invalid terminal		
		USFCWTOO	X‘1B’	WRITE CONV for output-only terminal		
		USFCWB	X‘1C’	WRITE ERASE and CONV		
		USFCCCPY	X‘1D’	COPYLBM or COPYLBT chained		
		USFIDA	X‘1E’	Invalid data or length		
		USFILDOA	X‘1F’	LDO address invalid		
		USFJTOJ	X‘20’	Reserved		
		USFMT100	X‘21’	Over 100 LDOs		
		USFRILCP	X‘22’	Reserved		
		USFCRIRT	X‘23’	Request type invalid		
		USFRIOCC	X‘24’	Invalid FLAGS for a READ LDO		
		USFEWBLK	X‘25’	WRITE ERASE and BLK		
		USFCRSDC	X‘26’	Reserved		
		USFIREST	X‘27’	RESET option invalid		
		USFWBT32	X‘28’	WRITE option invalid		

Figure H-10 (Part 2 of 4). The RPL’s RTNCD-FDBK-FDBK2 DSECT (ISTUSFBC)

Field	*DSECT DS or ORG label*	*DSECT EQU label*	*Value*	*Meaning (For EQU, meaning when bit setting is on or when byte value is set)*	*OS/VS or DOS/VS Displacement*	
					Dec	*Hex*
		USFRMD32	X'29'	READBUF for non-3270 terminal		
		USFCTN32	X'2A'	COPY operation to non-3270 terminal		
		USFWCNVR	X'2B'	WRITE CONV when data expected		
		USFRNFT3	X'2C'	Output not preceded by input		
		USFRCINV	X'2D'	RESET COND with error lock set		
		USFINVRM	X'2E'	BLOCK-MSG-TRANS-CONT invalid		
		USFLGCNT	X'2F'	Too many leading graphic characters		
		USFCPCNT	X'30'	Invalid COPYLBM or COPYLBT LEN		
		USFIDAEL	X'31'	Invalid data area		
		USFUSELE	X'32'	Request invalid for specified area		
		USFCRNF	X'33'	WRITE CONV reply not possible		
		USFNORD	X'34'	First I/O not READ or SOLICIT		
		USFCPYE2	X'35'	Terminals not on same control unit		
		USFRELNP	X'36'	RESET LOCK invalid		
		USFCPYE1	X'37'	Terminal not connected		
		USFDFIBH	X'38'	Reserved		
		USFDFIPO	X'39'	Invalid PROC option		
		USFQSCIE	X'3A'	Reserved		
		USFREXAL	X'3B'	NFME-NRRN response		
		USFSDNP	X'3C'	SEND SCHED still pending		
		USFSCEM	X'3D'	Reserved		
		USFSCEF	X'3E'	Reserved		
		USFSNQC	X'3F'	Reserved		
		USFSINVC	X'40'	CONTROL invalid		
		USFSDFR	X'41'	No SDT issued		
		USFSNOS	X'42'	Reserved		
		USFSNOUT	X'43'	Reserved		
		USFLIMEX	X'44'	RESPLIM exceeded		
		USFSSEQ	X'45'	Reserved		
		USFSINVS	X'46'	Reserved		
		USFSINVR	X'47'	Invalid SEND for 3270		
		USFINVRT	X'48'	Redundant clear indicator		
		USFACINV	X'49'	Invalid STSN indicator		
		USFICNDN	X'4A'	APPL name not available		
		USFILSIN	X'4B'	INTRPRET sequence invalid		
		USFIICBE	X'4C'	No terminal or APPL name		
		USFINTNA	X'4D'	No interpret table		
		USFILNBL	X'4E'	Invalid use of a NIB list		
		USFINVOT	X'4F'	ACQUIRE-ACCEPT invalid		
		USFINVAP	X'50'	CONANY-CONALL invalid		
		USFAPNAC	X'51'	APPL never accepts		
		USFINVNB	X'52'	NIB invalid		
		USFSYMNU	X'53'	Terminal or APPL name not found		
		USFDSTUO	X'54'	Invalid terminal name		
		USFNOPAU	X'55'	OPNDST ACQUIRE not authorized		
		USFMDINC	X'56'	Invalid MODE		
		USFINVMD	X'57'	No MODE		
		USFBHSUN	X'58'	Reserved		
		USFMDNAU	X'59'	Reserved		
		USFMBHSS	X'5A'	Reserved		
		USFINVLA	X'5B'	Invalid logon message address		
		USFDUPND	X'5C'	Duplicate terminal names		
		USFDSTNO	X'5D'	Terminal not connected		
		USFNPSAU	X'5E'	CLSDST PASS not authorized		
		USFRSCNO	X'5F'	CLSDST PASS invalid		

Figure H-10 (Part 3 of 4). The RPL's RTNCD-FDBK-FDBK2 DSECT (ISTUSFBC)

Field	*DSECT DS or ORG label*	*DSECT EQU label*	*Value*	*Meaning (For EQU, meaning when bit setting is on or when byte value is set)*	*OS/VS or DOS/VS Displacement*	
					Dec	*Hex*
		USFRSCNC	X‘60’	CLSDST RELEASE invalid		
		USFINVSL	X‘61’	SETLOGON invalid		
		USFMCNVD	X‘62’	Invalid request for MODE		
		USFRNOEL	X‘6C’	Exceeded limit on outstanding RCVCMD requests		
		USFRNONA	X‘6D’	Application program not authorized		
		USFRNOSE	X‘6E’	REPLY command Syntax error		
		USFRNOIA	X‘6F’	SENDCMD/RCVCMD processor inactive		
		USFRNOCL	X‘70’	SENDCMD/RCVCMD processor Closing its ACB		
		USFRNOCE	X‘71’	Operator command invalid		
		USFPCIT	X‘72’	Invalid use of the TERMSESS macro		
				The following byte values apply to the FDBK field (RPLFDB3 in the IGFRPL DSECT):		
		USFIACT	X‘00’	APPL is active		
		USFIINA	X‘04’	APPL is inactive		
		USFINA	X‘08’	APPL never accepts logon requests		
		USFITNA	X‘0C’	APPL temporarily not accepting logon Requests		
		USFIQUIE	X‘10’	APPL no longer accepts logon requests		

Figure H-10 (Part 4 of 4). The RPL’s RTNCD-FDBK-FDBK2 DSECT (ISTUSFBC)

Control Block: NIB

	Displacement					
	Dec	*Hex*				
	0	0				NIBLEN (NIBLEN)
	4	4	CID (NIBCID)			
	8	8	USERFLD (NIBUSER)			
	12	C	NAME (NIBSYM)			
	20	14	MODE (NIBMODE)			
See ISTDVCHR (Figure H-13)	28	1C	General characteristics	Device Type	Model	Additional characteristics
	32	20	Physical device address	DEVCHAR (NIBDEVCH)		
See ISTDPROC (Figure H-14)	36	24	PROC (NIBPROCD) PROC1	PROC2	PROC3	PROC4
	40	28	NIB attributes (NIBFLGS)		RESPLIM (NIBLIMIT)	
	44	2C	EXLST (NIBEXLST)			
	48	30	LOGMODE (NIBLMODE			
See ISTDBIND (Figure J-4 in Appendis J for DSECT at area printed to by BNDAREA)	56	38	BNDAREA (NIBNDAR)			
	60	3C	Reserved			

Figure H-11. The Format of the DOS/VS and OS/VS NIB

NIB DSECT: ISTDNIB

Field	*DSECT DS or ORG label*	*DSECT EQU label*	*Value*	*Meaning (For EQU, meaning when bit setting is on or when byte value is set)*	*DOS/VS Displacement*		*OS/VS Displacement*	
					Dec	*Hex*	*Dec*	*Hex*
BNDAREA	NIBNDAR			Bind area address	58	38	56	38
CID	NIBCID	–	–	Communication ID	4	4	4	4
CON	NIBFLG1	NIBCON	X'40'	CON=YES	40	28	40	28
DEVCHAR	NIBDEVCH			(See ISTDVCHR, Figure H-13)	28	1C	28	1C
EXLST	NIBEXLST	–	–	EXLST address	44	2C	44	2C
LISTEND	NIBFLG1	NIBLAST	X'80'	LISTEND=NO	40	28	40	28
LOGMODE	NIBLMODE	–	–	LOGMODE value	48	30	48	30
Logon request canceled	NIBFLG1	NIBNACLQ	X'08'	If OPNDST ACCEPT failed, the pending logon request has been canceled	40	28	40	28
MODE	NIBMODE	–	–	MODE value	20	14	20	14
NAME	NIBSYM	–	–	NAME value	12	C	12	C
NIBLEN	NIBLEN	–	–	NIB length	3	3	3	3
PROC	NIBPROCD			(See ISTDPROC, Figure H-14)	36	24	36	24
REQD	NIBFLG1	NIBTREQ	X'02'	Required cryptography	40	28	40	28
RESPLIM	NIBLIMIT	–	–	RESPLIM value	42	2A	42	2A
SEL	NIBFLG1	NIBTSEL	X'04'	Selective cryptography	40	28	40	28
SDT	NIBFLG1	NIBSDAPP	X'20'	SDT=APPL	40	28	40	28
USERFLD	NIBUSER	–	–	USERFLD value	8	8	8	8

Figure H-12. The DOS/VS and OS/VS NIB DSECT (ISTDNIB)

DEVCHAR DSECT: ISTDVCHR

Field	DSECT DS or ORG label	DSECT EQU label	Value	Meaning (For EQU, meaning when bit setting is on or when byte value is set)	OS/VS or DOS/VS Displacement Dec	Hex
DEVCHAR	DEVSHCH			Device scheduling characteristics:	28	1C
		DEVINPUT	X'80'	The device is an input device; it is capable of sending data to the application program.		
		DEVOTPUT	X'40'	The device is an output device; it is capable of receiving data sent to it from the application program.		
		DEVCONVR	X'20'	The device is equipped with the Conversational Mode feature. This means that the device can receive data instead of the usual positive response to the block of data just sent from the device.		
		DEVSUBND	X'10'	The device has schedulable Sub-Nodes		
		DEVSPS	X'08'	The device is a 3275 Display Station with a printer attached, a 3284, or a 3286		
		DEVNNSPT	X'04'	The device is connected to a dial-in or a dial-in-out line.		
		DEVCCTL	X'02'	Additional information is contained in the first half of the fourth byte (DEVFLAGS)		
		DEVRSV01	X'01'	Reserved		
	DEVTCODE			The device is the device listed or it is a device that is compatible with the one listed	29	1D
		DEV2740	X'01'	a 2740 Communication Terminal.		
		DEV2741	X'02'	a 2741 Communication Terminal.		
		DEV1050	X'03'	a 1050 Data Communication System.		
		DEVTWX	X'04'	a CPT-TWX Teletypewriter Terminal.		
		DEVWTTY	X'05'	a World Trade Telegraph Station.		
		DEV115A		a Western Union Plan 115 A Station		
		DEV83B3	X'07'	an AT&T 83B3 Selective Calling. Station.		
		DEV2715	X'08'	a 2715 Transmission Control Unit.		
		DEV2770	X'09'	a 2770 Data Communication Terminal.		
		DEV2780	X'0A'	a 2780 Data Transmisssion Terminal.		
		DEV3735	X'0B'	a 3735 Programmable Buffered Terminal.		
		DEV3780	X'0C'	a 3780 Data Transmission Terminal.		
		DEV1130	X'0D'	an 1130 CPU.		
		DEV1800	X'0E'	an 1800 Data Acquisition and Control System.		
		DEV3125	X'11'	a 370 CPU Model 125.		
		DEV3135	X'12'	a 370 CPU Model 135.		
		DEVSYS3	X'13'	a System/3 CPU or a System/32 CPU.		
		DEV2701	X'14'	a 2701 Data Adapter Unit		
		DEV2703	X'15'	a 2703 Transmission Control Unit		
		DEV3704	X'16'	a 3704 Communications Controller.		
		DEV3705	X'16'	a 3705 Communications Controller.		
		DEV2980	X'18'	a 2980 General Banking Terminal.		
		DEV3277	X'19'	a 3277 Display Station.		
		DEV3284	X'1A'	a 3284 Printer.		
		DEV3286	X'1B'	a 3286 Printer.		
		DEV3275	X'1C'	a 3275 Display Station.		
		DEV3741	X'1D'	a 3741 Data Station (of a 3740)		
		DEV3747	X'1E'	a 3747 Data Converter (of a 3740)		

Figure H-13 (Part 1 of 3). The NIB's DEVCHAR DSECT (ISTDVCHR)

Field	*DSECT DS or ORG label*	*DSECT EQU label*	*Value*	*Meaning (For EQU, meaning when bit setting is on or when byte value is set)*	*OS/VS or DOS/VS Displacement*	
					Dec	*Hex*
		DEVMTA	X'28'	a Multiple Terminal Access (MTA) terminal. MTA terminals are explained in *Network Control Program Generation and Utilities.*		
		DEV2972	X'33'	a 2972 Station Control Unit.		
		DEV3271	X'34'	a 3271 Control Unit.		
		DEVCC	X'35'	a Cluster Controller.		
		DEV3272	X'36'	a 3272 Control Unit.		
		DEV1052	X'64'	a 1052 Printer-keyboard.		
		DEV1053	X'65'	a 1053 Printer.		
		DEV1054	X'66'	a 1054 Paper Tape Reader.		
		DEV1055	X'67'	a 1055 Paper Tape Punch.		
		DEV1056	X'68'	a 1056 Card Reader.		
		DEV1057	X'69'	a 1057 Card Punch.		
		DEV1058	X'6A'	a 1058 Printing Card Punch.		
		DEV1092	X'6B'	a 1092 Programmed Keyboard.		
		DEV1093	X'6C'	a 1093 Programmed Keyboard.		
		DEVLU	X'6D'	a Logical Unit (use record-mode).		
		DEV545	X'78'	a 545 Output Punch (of a 2770).		
		DEV1017	X'79'	a 1017 Paper Tape Reader (requires a 2772).		
		DEV1018	X'7A'	a 1018 Paper Tape Punch (requires a 2772).		
		DEV2203	X'7B'	a 2203 Printer (of a 2770).		
		DEV2213	X'7C'	a 2213 Printer (of a 2770).		
		DEV2265	X'7D'	a 2265 Display Station.		
		DEV2502	X'7E'	a 2502 Card Reader.		
		DEV50	X'7F'	a 50 Magnetic Data Inscriber (of a 2770).		
		DEV1255	X'80'	a 1255 Magnetic Character Reader.		
		DEV5496	X'81'	a 5496 Data Recorder.		
DEVMCODE				Device model code:	30	1E
		DEVMOD1	X'00'	Device is designated as Model 1		
		DEVMOD2	X'01'	Device is designated as Model 2		
DEVFLAGS					31	1F
		DEVFCCTL	X'F0'	used if device requires connection control.		
		DEVCBSC	X'80'	The device uses BSC line control.		
		DEVCSSL	X'40'	The device uses start-stop line control, but has no Transmit Interrupt feature.		
		DEVCRVB	X'20'	The device has the Transmit Interrupt feature; this means that the application program can interrupt a transmission from the device by issuing a RESET macro instruction.		
		DEVCSWL	X'10'	The terminal is connected via a switched line, rather than nonswitched line.		
		DEVCHAR3	X'0F'	Compatibility existing code.		
		DEVCATTN	X'08'	The terminal can interrupt the application program (and cause its ATTN exit-routine to be scheduled).		

Figure H-13 (Part 2 of 3). The NIB's DEVCHAR DSECT (ISTDVCHR)

Field	*DSECT DS or ORG label*	*DSECT EQU label*	*Value*	*Meaning (For EQU, meaning when bit setting is on or when byte value is set)*	*DOS/VS Displacement*	
					Dec	*Hex*
		DEVCCHEK	X'04'	The terminal has the Checking feature.		
		DEVCSTCL	X'02'	The terminal has the Station Control feature.		
		DEVCSLPN	X'01'	The terminal has the Selector Pen feature.		
	DEVPHYSA	–	–	Physical device address or local address for SNA devices, e.g., 3270 "from" terminal for COPY operation.	32	20
		DEVREC	X'80'	RECORD mode can be used for this terminal or logical unit.	33	21
		DEVBASIC	X'40'	BASIC mode can be used for this terminal.		
			X'20'	Reserved		
			X'10'	Reserved		
			X'08'	Reserved		
			X'04'	Reserved		
			X'02'	Reserved		
			X'01'	Reserved		
	DEVRSV03			Reserved	34	22

Figure H-13 (Part 3 of 3). The NIB's DEVCHAR DSECT (ISTDVCHR)

Field	DSECT DS or ORG label	DSECT EQU label	Value	Meaning (For EQU, meaning when bit setting is on or when byte value is set)	OS/VS or DOS/VS Displacement	
					Dec	Hex
PROC	PROPROC1	PROTRUNC	X'40'	PROC = TRUNC	36	24
		PROXPOPT	X'20'	= BINARY		
		PRODFASY	X'10'	= DFASYX		
		PRORESPX	X'08'	= RESPX		
		PROCA	X'04'	= CA		
		PROCS	X'02'	= CS		
		PRORPLC	X'01'	= RPLC		
	PROPROC2	PROERPO	X'40'	PROC = NERPOUT	37	25
		PROLGOT	X'20'	= NLGOUT		
		PROSYSR	X'10'	= APPLRESP		
		PROFIFOR	X'08'	= ORDRESP		
		PRONTFL	X'04'	= NTMFLL		
		PROEMLC	X'02'	= ELC		
		PROCFTX	X'01'	= CONFTXT		
	PROPROC3	PROERP1	X'40'	PROC = NERPIN	38	26
		PROLGIN	X'20'	= NLGIN		
		PRONTO	X'10'	= NTIMEOUT		
		PROMONIT	X'04'	= MONITOR		
	PROPROC4	PROEIB	X'80'	PROC = EIB	39	27
		PROMODB	X'08'	= BLOCK		
		PROMODM	X'04'	= MSG		
		PROMODT	X'02'	= TRANS		
		PROMODC	X'01'	= CONT		

Figure H-14. The NIB's PROC DSECT (ISTDPROC)

Appendix I. Start-Stop, BSC, and Local Non-SNA 3270 Considerations

This appendix lists various device-dependent aspects of programming with ACF/VTAM. There is a separate section for each supported type of terminal. Much of this information can be found elsewhere in this publication; it is repeated here for your convenience.

The devices listed in this appendix represent the level of support provided by ACF/VTAM for local non-SNA 3270, start-stop, BSC terminals. For any device that is not listed but that is compatible with a device that is listed, use the information given for the listed device.

See the appropriate terminal product component description or programming publication for ACF/VTAM considerations that apply to a particular SNA terminal product.

IBM 1050 Data Communication System

Before using the information in this section, you should be familiar with the description of this system in *IBM 1050 Reference Digest,* GA24-3020.

If FEATURE=ATTN is specified on the TERMINAL macro instruction during ACF/VTAM definition, the MONITOR processing option should be set in the NIB used for connection so that an ATTN exit list routine can be used to handle the attention interruptions.

If FEATURE=TOSUPPR is specified on the TERMINAL macro, the NTIMEOUT processing option should be set in the NIB used for connection.

INQUIRE (OPTCD=DEVCHAR) can be issued to determine the device type in the 105C system only if the DEVICE operand is coded for the TERMINAL macro instructior during ACF/VTAM definition.

The KEEP processing option should be set if the application program's input area is too small to hold the data arriving from the communications controller. (The amount of incoming data is affected by the TRANSFER operand of the LINE macro and the CUTOFF operand of the GROUP macro.

Translation from lowercase to uppercase is not provided.

Idle characters are inserted by the communications controller (as specified with the LINESIZ and CRRATE operands of the LINE macro instruction). If the Auto-fill character generation feature is present, specify PROC=NTMFLL in the NIB used for connection; this will suppress the insertion of idle characters by the communications controller.

If you are using the 1050 in group mode, you will have one symbolic terminal name for issuing OPNDST and I/O requests. If you are using the 1050 in specific mode, Figure I-1 describes the handling for different types of lines under DOS/VS, OS/VS1, and OS/VS2 SVS.

When a 1050 dial-in device exceeds the .negative response to polling limit, the NCP terminates the input operation and sets the error lock (first bit in FDBK2 set on). The error lock can be reset and the input operation retried. If the error persists, CLSDST should be issued.

The MSG, LGIN, LGOUT, BINARY, and EIB processing options are invalid for 1050 devices.

Line / System	Multipoint	Point-to-Point	Switched
DOS/VS	You define the 1050 and each of its components with unique symbolic names. To connect with a component, issue an OPNDST for it. The system handles scheduling in connections to more than one component.	You define the 1050 and each of its components with unique symbolic names. To connect with a component, issue an OPNDST for the terminal first and then the component. You handle scheduling in connections to more than one component by issuing an OPNDST for the terminal and then issuing the sequence OPNDST/requests/ CLSDST for one component at a time.	You can define only the 1050 with a unique symbolic name as a terminal. To connect with a a component, issue an OPNDST for the terminal and then supply it with the component selection character in the data stream. You handle scheduling in connections to more than one component by varying the selection character.
OS/VS	You define the 1050 and each of its components with unique symbolic names. To connect with a component, issue an OPNDST for it. The system handles scheduling in connections to more than one component.	You define the 1050 and each of its components with unique symbolic names. To connect with a component, issue an OPNDST for it. The system handles scheduling in connections to more than one component.	You can define only the 1050 with a unique symbolic name as a terminal. To connect with a component, issue an OPNDST for the terminal and then supply it with the component selection character in the data stream. You handle scheduling in connections to more than one component by varying the selection character.

Figure I-1. Handling Input/Output for 1050 Components under DOS/VS and OS/VS

After a READ macro instruction has been issued for an active 1050 terminal, it cannot be deactivated until data has been received.

IBM 2740 Communication Terminal, Model 1

Before using the information in this section, you should be familiar with the description of the 2740 in *IBM 2740 Communication Terminals Models 1 and 2 Component Description,* GA24-3403.

Translation from lowercase to uppercase is not provided.

If the terminal has no station control or transmit control feature, data can be entered by the terminal operator when the BID key is pressed, even though no READ or SOLICIT is pending for the terminal. The communications controller ignores the data. To avoid losing the data, verify that the installation has defined the terminal as conversational (CONV=YES on the TERMINAL macro) and obtain all data with WRITE (OPTCD= CONV) or READ (PROC=CONT) macro instructions.

If you are using the 2740 in group mode, you issue OPNDST and I/O requests for a single symbolic terminal name. If you are using the 2740 in specific mode, you issue OPNDST and I/O requests for symbolic terminal names representing *each* component of the system that you are addressing in specific mode. If the installation has provided you with the capability of using the 2740 in *either* mode, you should issue OPNDST for both the symbolic terminal name representing the entire 2740 system, *and* for the symbolic terminal name of the component. (If more than one component is on the same point-to-point line, you should establish connection with only one component at a time.)

The MSG, LGIN, LGOUT, EIB, BINARY, and MONITOR processing options are invalid for 2740-1 devices. BLOCK, NERPIN, and NERPOUT are valid only if the terminal has the checking feature.

IBM 2740 Communication Terminal, Model 2

Before using the information in this section, you should be familiar with the description of the 2740 in *IBM 2740 Communication Terminals Models 1 and 2 Component Description,* GA24-3403.

Regardless of the setting of the BLK-LBM-LBT option code when WRITE is issued, the output operation is done as though LBT had been set (that is, an EOT is sent to the terminal after the terminal receives the block of data and sends a positive response).

If a block of data sent to the terminal is too large to fit in the terminal's buffer, the application program is not notified of this fact.

If a terminal is addressed after a BID key has been pressed, leading graphic characters are returned to the application program indicating that the output operation could not be completed normally. If the LGOUT processing option is in effect, the leading graphic characters are placed in the WRITE RPL's SENSE field.

Translation from lowercase to uppercase is not provided.

If you are using the 2740 in group mode, issue OPNDST and I/O requests for a single symbolic terminal name. If you are using the 2740 in specific mode, issue OPNDST and I/O requests for the symbolic terminal names representing *each* component of the system that you are addressing in specific mode. If the installation has provided the capability of using the 2740 in *either* mode, you should issue OPNDST for both the symbolic terminal name representing the entire 2740 system, *and* for the symbolic terminal name of the component. (If more than one component is on the same point-to-point line, you should establish connection with only one component at a time.)

The MSG, NTMFLL, EIB, NTIMEOUT, MONITOR, ELC, and BINARY processing options are invalid for 2740-2 devices. BLOCK is valid only if the terminal has the checking feature.

IBM 2741 Communication Terminal

Before using the information in this section, you should be familiar with the description of the 2741 in *IBM 2741 Communication Terminal,* GA24-3415.

If FEATURE=ATTN is specified on the TERMINAL macro during ACF/VTAM definition, the MONITOR processing option should be set in the NIB used for connection so that an ATTN exit-routine can be used to handle the attention interruptions.

No text timeout limitation is provided for the terminal (that is, once EOA has been sent from the terminal, no time limit between successive data characters exists). The NTIMEOUT processing option should be specified.

SOLICIT (PROC=CONT) causes an EOA and an EOT to be sent to the terminal, placing it in a transmit state. Before issuing WRITE while soliciting data with CONT set, RESET (OPTCD=COND) must be issued.

Conversational output (WRITE with OPTCD=CONV) is valid for 2741 terminals, even though the terminal cannot be specified during ACF/VTAM definition as conversational.

If the terminal has no break feature, the first I/O request following connection should be READ or SOLICIT. The READ or SOLICIT may be completed in error if the terminal was powered on before the communications controller became active; if this occurs, issue RESET followed by WRITE to maintain the conversational mode of the 2741 terminal.

The LGIN, LGOUT, EIB, NERPIN, NERPOUT, and BINARY processing options are invalid for a 2741 terminal.

IBM Communicating Magnetic Card Selectric Typewriter

If FEATURE=ATTN is specified on the TERMINAL macro during ACF/VTAM definition, the MONITOR processing option should be set so that an ATTN exit-routine can be used to handle the attention interruptions.

If the terminal has no break feature, the first I/O request following connection should be READ or SOLICIT. The READ or SOLICIT may be completed in error if the terminal was powered on before the communications controller became active; if this occurs, issue RESET followed by WRITE to maintain the conversational mode of the terminal.

Text timeouts can be suppressed with the NTIMOUT processing option.

The LGIN, LGOUT, EIB, and BINARY processing options are invalid for this terminal.

IBM World Trade Telegraph Station (WTTY)

If FEATURE=ATTN is specified on the TERMINAL macro during ACF/VTAM definition, an ATTN exit-routine can be used to handle the attention interruptions. The MONITOR processing option must be set in order for the ATTN exit-routine to be scheduled.

If the MSG processing option is used for solicitation, the end-of-block sequence must be defined by the installation (with the GROUP macro). If TRANS is used, the end-of-transmission sequence must be defined by the installation (GROUP macro). CONT (continuous solicitation) can be used, but should be avoided if output for the terminal occurs frequently. If CONT is used, RESET must be issued before WRITE can be issued.

No terminal ID verification is provided.

Conversational writing (WRITE with OPTCD=COND) is valid for this terminal.

Text timeouts can be suppressed by setting the NTIMEOUT processing option for the terminal.

The LGIN, LGOUT, NTMFLL, EIB, NERPIN, NERPOUT, and BINARY processing options are invalid for this terminal.

IBM System/7 CPU

Before using the information in this section, you should be familiar with the information about System/7 in *MSP/7 Macro Library/Relocatable: Coding the Input/Output Macros,* GC34-0020.

The System/7 is supported as a 2740 (Model 1 with checking) on a switched or nonswitched point-to-point start-stop line or as a System/3 on a BSC line.

The BLOCK, MSG, LGIN, LGOUT, NTMFLL, EIB, NERPIN, NERPOUT, MONITOR, and BINARY processing options are invalid for the System/7.

A remote IPL of the System/7 is implemented by issuing a series of WRITE macro instructions to send the IPL object program text to the device. The ELC-NELC processing option must be set to ELC, and idle characters must not be used.

IPL on a Start-Stop Line

On a start-stop line, format the output data like this:

First WRITE:	EOT	EOA	UC	DEL	LC	object program text	EOB
Successive WRITEs:					EOA	object program text	EOB
Last WRITE:					EOA	object program text	EOT

(The EOT in the first WRITE is used to place the System/7 in stand-by mode in case it is not prepared to receive data.)

IPL on a BSC Line

On a BSC line, format the output data like this:

First WRITE:	DC1	DC1	ENQ				
System/7 Response:	ACK0						
Second WRITE:	DLS	STX	$UBIPL code	DLE	ETX	or	ETB
System/7 Response:	ACK1						
Successive WRITEs:	DLE	STX	object program text	DLE	ETX	or	ETB
System/7 Response:	ACK0	or	ACK1				
Last WRITE:	EOT						

AT&T 83B3 Selective Calling Station

Conversational output (WRITE with OPTCD=CONV) is valid for this terminal.

Solicitation with BLOCK or MSG is handled by ACF/VTAM as though TRANS had been specified. If the CONT processing option is used, all WRITE requests must be preceded by RESET. Avoid CONT if WRITE requests are to be issued frequently.

If you are using the terminal in group mode, issue OPNDST and I/O requests to the symbolic terminal name representing the terminal. If you are using the terminal is specific mode, issue OPNDST and I/O requests to the various symbolic terminal names assigned to *each* component of the terminal. If the installation has provided the capability for using the terminal in *either* mode, you should issue OPNDST for the symbolic terminal name that represents the terminal, *and* for the symbolic terminal name that represents the terminal component. (If more than one component is on the same point-to-point line, you should establish connection with only one component at a time.)

The LGIN, LGOUT, NTMFLL, EIB, NTIMEOUT, NERPIN, NERPOUT, MONITOR, and BINARY processing options are invalid for this device.

CPT-TWX, Models 33 and 35 (TWX)

If FEATURE=ATTN is specified on the TERMINAL macro during ACF/VTAM definition, an ATTN exit-routine can be used to handle the attention interruptions. The MONITOR processing option must be set if the ATTN exit routine is to be scheduled.

Text timeouts can be suppressed by setting the NTIMEOUT processing option.

Solicitation with BLOCK or MSG is handled as though TRANS had been specified. If the CONT processing option is used, all WRITE requests must be preceded by RESET. Avoid CONT if WRITE requests are to be issued frequently.

Conversational output (WRITE with OPTCD=CONV) is valid for this terminal.

The LGIN, LGOUT, EIB, NERPIN, NERPOUT, and BINARY processing options are invalid for this device.

Western Union Plan 115A Station

Solicitation with BLOCK or MSG is handled by ACF/VTAM as though TRANS had been specified. If the CONT processing option is used, all WRITE requests must be preceded by RESET. Avoid CONT if WRITEs are to be issued frequently.

Conversational output (WRITE with OPTCD=CONV) is valid for this terminal.

If you are using the terminal in group mode, issue OPNDST and I/O requests to the symbolic terminal name representing the terminal. If you are using the terminal in specific mode, issue OPNDST and I/O requests for the symbolic terminal names representing each terminal component with which you wish to communicate. If the installation has provided the capability of using the terminal in either mode, you should issue OPNDST for both the symbolic terminal name that represents the terminal, and for the symbolic terminal name that represents the terminal component. (If more than one component is on the same point-to-point line, you should establish connection with only one component at a time.)

The LGIN, LGOUT, NTMFLL, EIB, NTIMEOUT, NERPIN, NERPOUT, MONITOR, and BINARY processing options are invalid for this device.

IBM 2770 Data Communication System

Before using the information in this section, you should be familiar with the description of the 2770 in *System Components: IBM 2770 Data Communication System,* GA27-3013.

By setting the ERASE-EAU-NERASE option code to ERASE, a WRITE macro instruction causes a ERASE/WRITE command to be sent to the system's 2265 terminal. ERASELBM or ERASELBT LDOs can also be used.

To send a WRITE at Line Address command to a 2265 terminal, include the WLA escape sequence in the data stream that is to be written to the terminal.

Error recovery messages from the 2770 system in the form of

```
S              S             S
O    %    S    T    text     T
H              X             X
```

are not recognized as such by ACF/VTAM or the communications controller, but are handled by ACF/VTAM as a text message with header. The communications controller removes the imbedded STX and passes the remainder to the application program as two blocks:

First block: %   S   Second block: text

When the application program receives the first block, bit 7 (DATAFLG=SOH) is set on, indicating header data. Another READ is required to receive the second block.

Test Request Messages (which begin SOH % /) are intercepted by the communications controller. The READ macro instruction that would have moved the message into program storage had the interception not occurred is canceled with RTNCD=12 and FDBK2=2.

Request for Test messages of the form

```
S                         S             E
O    %    XYN    addr     T    text     T
H                         X             X
```

are not intercepted, but are passed on to the application program in the same manner that any text message with header data would be passed: the application program's READ obtains the header portion, with the SOH removed and with bit 7 (DATAFLG=SOH) set on in the RPL's FDBK field; a second READ is required for the text portion.

If you are using the 2770 in group mode, you will have one symbolic name for issuing OPNDST and I/O requests. If you are using the 2770 in specific mode, input/output is handled as it is described for the 1050 Data Communications System in this appendix.

Data sent *from* the device in transparent text mode is placed in the application program's input area unaltered. The application program can check the NCP return codes in the extended response byte of the SENSE field to determine whether the data was sent in transparent text mode.

ACF/VTAM does not compress output data or expand input data; this must be done by the application program.

The LGIN, LGOUT, NTMFLL, NTIMEOUT, and MONITOR processing options are invalid for the 2770.

IBM 2780 Data Transmission Terminal

Before using the information in this section, you should be familiar with the description of the 2780 in *Component Description: IBM 2780 Data Transmission Terminal,* GA27-3005.

Device-control characters required for Vertical Forms Control must be supplied by the application program. The application program must likewise supply the control characters for Printer Horizontal Format Control (including the escape sequence ESC HT ...).

Test Request Messages (which begin SOH % /) are intercepted by the communications controller. The READ macro instruciton that would have moved the message into program storage had the interception not occurred is canceled with RTNCD=12 and FDBK2=2.

Request for Test messages of the form

```
S                          S            E
O    %    XYN    addr      T    text    T
H                          X            X
```

are not intercepted, but are passed on to the application program in the same manner that any text message with header data would be passed: the application program's READ obtains the header portion, with the SOH removed and with bit 7 (DATAFLG=SOH) set on in the RPL's FDBK field; a second READ is required for the text portion.

If you are using the 2780 in group mode, you will have one symbolic name for issuing OPNDST and I/O requests. If you are using the 2780 in specific mode, input/output is handled as it is described for the 1050 Data Communications System in this appendix.

Data sent *from* the device in transparent text mode is placed in the application program's input area unaltered. The application program can check the NCP return codes in the extended response byte of the SENSE field to determine whether the data was sent in transparent text mode.

The LGIN, LGOUT, NTMFLL, NTIMEOUT, and MONITOR processing options are invalid for 2780 devices.

IBM 2972 General Banking Terminal System, Models 8 and 11

Before using the information in this section, you should be familiar with the description of the 2972 system in *Component Description: IBM 2972 Models 8 and 11 General Banking Terminal Systems,* GL27-3020.

Request for Test messages of the form

```
S                          S            E
O    %    XYN    addr      T    text    T
H                          X            X
```

are not intercepted by the communications controller. Instead, ACF/VTAM passes the message to the application program in the same manner that any text message with header data is passed: the application program's READ obtains the header portion, with the SOH removed and with bit 7 (DATAFLG=SOH) set on in the RPL's FDBK field; a second READ is required for the text portion.

The Batched Message feature is not supported by ACF/VTAM.

ACF/VTAM removes the 1-byte station address from the input data before moving the data into the application program's input area.

If a 2980 (Model 1 or 4) Teller Station includes a passbook printer or a 2980 (Model 2) Administrative Station includes an auditor key, ACF/VTAM assigns a symbolic name to the passbook printer or auditor key. ACF/VTAM forms the name by prefixing a dollar sign ($) to the name of the 2980's TERMINAL entry and deleting the last character of the name. When the application program issues INQUIRE (OPTCD=TERMS) using the 2980's TERMINAL entry name, ACF/VTAM places the passbook printer or auditor key name in the NIB generated by INQUIRE.

The BLOCK, MSG, LGIN, LGOUT, NTMFLL, NTIMEOUT, and MONITOR processing options are invalid for 2972 devices.

BSC and Local Non-SNA IBM 3270 Information Display System (Record Mode)

Before using the information in this section, you should be familiar with the description of the 3270 system in *IBM 3270 Information Display System Component Description,* GA27-2749, and *Introduction to Programming the 3270,* GC27-6999.

The application program can communicate with a non-SNA 3270 as a remotely (BSC) or locally attached non-SNA terminal or as though it were a logical unit. The application program can be independent of the mode of attachment (local vs. remote) of a record-mode 3270. The 3270 is treated as a logical unit by setting the NIB's MODE field to RECORD when the 3270 is connected, and by exchanging requests and responses with SEND and RECEIVE macro instructions. None of the basic-mode macro instructions can be used.

Different devices on the same control unit may be used in different modes at the same time. A 3270 can be disconnected in one mode and reconnected in another. A BSC 3270 can only be used in different modes if the 3270 has been defined as PU=NO.

Since the 3270 has no programmable capabilities, ACF/VTAM cannot make a 3270 appear exactly like a logical unit to the application program. Consequently, restrictions apply to all SEND, RECEIVE, and SESSIONC communication with certain 3270 devices. These restrictions are described below. All aspects of communication (and connection) not mentioned apply as though the 3270 were a logical unit.

All commands and orders for the 3270 must be placed in the output data by the application program in the format expected by a BSC 3270 (that is, everything that follows the BSC communication control character is used as though the 3270 were a BSC 3270). Only remote command codes may be used even if the 3270 is attached locally.

A SEND macro instruction may point to a data area containing a Read Modified command to be sent to the device. The data retrieved from the device is placed in the application program's storage area in this format:

AID CUR^1 CUR^2 device control characters, orders, text

where AID is the Attention Identification and CUR^1 and CUR^2 form the 2-byte cursor address. If the terminal operator causes a "short read" to occur at the terminal (by pressing the CLEAR key or a Program Access key, for example), the input data consists of the AID only.

Note that a negative response with SSENSEI=PATH will be generated if there are not enough buffers available to ACF/VTAM to read the full buffer or to assemble all the input for a RECEIVE.

When a Copy command is placed in the data stream, the application program must include the physical device address of the "from" device. This address can be obtained by issuing INQUIRE (OPTCD=DEVCHAR). See Appendix H for the location of the physical device address in DEVCHAR. Note that a Copy operation is not valid for a locally attached 3270 and should not be used in an application program that is intended to be attachment-independent.

Responses may not be sent to the 3270. All incoming messages indicate that no response of any type is expected (RESPOND=(NEX,NFME,NRRN,NQRESP)).

Messages (requests) sent to the 3270 should contain only data. No change-direction indicators or data flow control commands should be sent (that is, only CONTROL= DATA is allowed). If the application program attempts to use an RPL with improper fields set, the SEND is completed with RTNCD=20 and FDBK2=71. Bracket indicators are used as described below. Chaining indicators must always mark the message as the sole element of a chain—that is, CHAIN=ONLY (all incoming messages are so marked).

No SESSIONC commands can be received from the 3270. Only the Clear command can be sent to 3270s. The effect of the Clear command is to reset both incoming and outgoing sequence numbers to 0, terminate any current bracket, and allow data traffic to continue.

A limited bracket protocol must be used so that the application program and the terminal operator can resolve attempts to send messages simultaneously. In this protocol, either the application program or the 3270 can begin the bracket. Only the application program can end the bracket; the 3270 cannot.

If, at the beginning of a session, the application program is the first to send the begin bracket indicator, the next request from the 3270 will indicate that the bracket is being continued. (If the application program's attempt to start the bracket arrives at the 3270 after the 3270 has sent a begin bracket indicator, the application program's request is rejected by the 3270 with a sense indication that a bracket race error has occurred.) If the application program does not start the bracket at the beginning of a session, the first input request from the 3270 will contain the begin bracket indicator. All subsequent requests from the 3270 will indicate that the bracket is being continued.

Once a bracket is started, the bracket continues until the application program sends a Clear command or a data message containing an end bracket indicator. In either case, the bracket is ended, and either the application program or the 3270 can again attempt to begin a bracket, as at the beginning of a session.

With this protocol, no brackets need be ended within the session; the entire interval between connection and disconnection can be treated as one bracket. Both BSC and local 3270s use bracket termination rule 2 (unconditional termination).

If the application program attempts to begin a new bracket without ending the current one, the response to the application program's SEND indicates Request Reject (SSENSEI=RR). If the application program sends an EB or NBB bracket indicator while not in a bracket, a state error (SSENSEI=STATE) is returned.

When the SEND data stream contains a Read command, the resulting input is received as a separate request, not as a response to the SEND operation. The application program should not begin or end a bracket when the data being sent contains a Read command. The application program must request a definite response type 1 for each request sent to the 3270 that begins or ends a bracket. Definite responses type 1 is requested by setting RESPOND=(NEX,FME,NRRN) in the SEND's RPL. Definite response type 1 should also be requested when a request is sent to a printer. All other output can indicate that either exception responses only–RESPOND=(EX,FME,NRRN)–or definite responses–RESPOND=(NEX,FME,NRRN)–are expected. Definite response type 2 is not used.

Status and sense information may be available in the RPL's USENSEI field when an exception request or response is received. The format of the information shown below is the same as the 2-byte combined sense and status (S/S) format returned from a BSC 3270 except that the 2 leftmost bits of each byte are set to 0 (this makes it easier to design the application program to be independent of the local-remote attachment mode of the terminal).

First Byte[1]	Second Byte[1]	Meaning
08	00	Device busy
04	00	Unit busy
02	00	Device end
01	00	Transmission check
00	20	Command rejected
00	10	Intervention required
00	08	Equipment check
00	04	Data check or bus-out check
00	02	Control check
00	01	Operation check

[1] Only the rightmost 6 bits of each byte are significant. These bits may be set in combination and should be set individually.

Note that unit check occurs in the status of locally attached devices for all of the above conditions.

The SSENSEI (system sense) field is set following the receipt of negative responses, but the SSENSMI (system sense modifier) field is always set to 0. The SSENSEI field can be set to indicate a path error (SSENSEI=PATH), a state error (SSENSEI=STATE), a request reject (SSENSEI=RR), or no error (SSENSEI=0). See the description of the SSENSEI field near the end of Appendix C. In the case of SSENSEI=0, the USENSEI field should be used to determine the cause of the exception condition.

If the BSC 3270 has been defined with PU=NO, logons for the 3270 cannot originate from the 3270 terminal itself (unlike a logical unit) except via the network solicitor. If the BSC 3270 has been defined with PU=YES, logons can originate from the 3270 (for example, from the enter key or magnetic card input).

If a 3270 device is polled and the 3271 control unit is not powered-on, an X'0C 01' return code will be received (see Appendix C). This will cause the terminal to be disconnected. When the 3270 device and 3271 control unit are powered-on, the user must call up the network operator and request connection with the network solicitor via a VARY LOGON command.

If a 3270 device is polled while it is powered-off and the 3271 control unit is powered-on, a device end status will be returned when the device is powered-on. When this occurs, reissue the request.

Test Request Messages from locally attached terminals are intercepted by ACF/VTAM. Test Request Messages from remotely attached terminals are intercepted by the communications controller. The arrival of the Test Request Message may cause a RECEIVE macro instruction to be completed with an error return code (RTNCD=12, FDBK2=2). A clear operation is performed (as though the application program had sent a Clear command), the user's LOSTERM exit-routine (if available) is scheduled with a parameter list code of 12, and all pending communications are canceled. The application program should disconnect the terminal. Connection is established in the same manner as it was initially—either by the ACQUIRE or by the ACCEPT form of OPNDST.

Note; *Terminal operators of the 3270 should be advised that, unless they enter a logoff prior to actually shutting off the device, under certain circumstances, unauthorized users could gain access to the application program that they were running.*

BSC and Local Non-SNA IBM 3270 Information Display System (Basic Mode)

Before using the information in this section, you should be familiar with the description of the 3270 system in *IBM 3270 Information Display System Component Description,* GA27-2749, and *Introduction to Programming the 3270,* GC27-6999.

The application program can communicate with a remote non-SNA 3270 as a BSC terminal if the 3270 has been defined with PU=NO in an ACF/VTAM definition statement. The terminal is handled remotely as a BSC terminal or locally by setting the NIB's MODE field to BASIC when the terminal is connected, and by exchanging data with READ and WRITE macro instructions. None of the record-mode macro instructions can then be used. Different devices on the same control unit may be used in different modes at the same time. A 3270 device can be disconnected and reconnected in the other mode.

When the terminal sends sense and status information in response to a READ, WRITE, or DO macro instruction, ACF/VTAM places the information in the RPL's SENSE field. ACF/VTAM also sets the RPL's RTNCD field to 4 and sets the FDBK2 field to 2 to signal that the SENSE field has been set. The SENSE field codes are described below.

If the SENSE field indicates that an error arose because operator intervention was required at the device, the failed operation may be retried after execution of a RESET macro instruction with OPTCD set to UNCOND or LOCK.

If a 3270 device is polled and the 3271 control unit is not powered-on, a X'0C 01' return code will be received (see Appendix C). This will cause the terminal to be disconnected. When the 3270 device and 3271 control unit are powered-on, the user must call up the network operator and request connection with the network solicitor via a VARY LOGON command.

If a 3270 device is polled while it is powered-off and the 3271 control unit is powered-on, a device end status will be returned when the device is powered-on. When this occurs, reissue the request.

To unlock the keyboard of a 3270 display station, issue a WRITE macro instruction with an unlock-keyboard control character included in the data stream.

Test Request Messages (which begin SOH % /) from locally attached terminals are intercepted by ACF/VTAM. Test Request Messages from remotely attached terminals are intercepted by the communications controller. Any READ macro that would have received the message had the interception not occurred is completed with RTNCD=12 and FDBK2=2 return codes. The terminal must then be disconnected. In addition, the user's LOSTERM exit-routine (if one is available) is scheduled with a parameter list code of 12.

The BLOCK, MSG, CONT, LGIN, LGOUT, NTMFLL, EIB, NTIMEOUT, ELC, and MONITOR processing options are invalid for 3270 devices. BINARY is invalid for locally attached devices.

The BLK-LBM-LBT option code (applicable for output) should be set to LBT; BLK is invalid, and LBM requires that you be aware of whether the device is locally or remotely attached (because no line control characters are sent regardless of the attachment mode—see Appendix B).

When data is sent to a 3270, any message containing an X'FF' embedded in it will fail. The X'FF' will result in a path error.

Only remote command codes may be used even if the 3270 is attached locally.

Input Considerations

Since ACF/VTAM deletes all communication control characters arriving from remotely attached devices, your input processing need not take into account whether the device is locally or remotely attached.

To avoid losing incoming data when the input area is too small, specify the KEEP processing option in the NIB used to connect the device. Then if the data is too long to fit, ACF/VTAM will fill the input area to capacity, set the second bit (DATAFLG=EOB) of the FDBK field off, and hold the remaining data for the next read request. See the KEEP-TRUNC processing in the NIB macro instruciton for further details.

A READBUF LDO can be used to send a Read Buffer command to a terminal. See the LDO macro instruction (CMD=READBUF) for an explanation of how this is accomplished. The data in the application program's input area upon completion of the DO macro instruction is arranged like this:

AID   CUR^1 CUR^2 SF   ATTR   text

where AID is the Attention Identification and CUR^1 and CUR^2 form the 2-byte cursor address. The SF (Start Field) and ATTR (Attribute Byte) are present only if the device buffer is formatted.

Output Considerations

There are three different output operations available; they are selected by setting the ERASE-EAU-NERASE option code in the RPL of a WRITE macro instruction.

WRITE (OPTCD=ERASE) is a two-part operation; it first clears the device's entire buffer, and then it sends the output data that you provide via the RPL's AREA field. In the beginning of that data you must provide the Write Control Character (WCC) followed by the appropriate device-control characters, orders, and text. If you set the BLK-LBM-LBT option code to LBT, you need not include line-control characters; ACF/VTAM will include them for remotely attached devices, and omit them for locally attached devices.

WRITE (OPTCD=EAU) sends an Erase All Unprotected command to the device. Since no output data is involved with this form of WRITE, set the RPL's RECLEN field to 0.

WRITE (OPTCD=NERASE) sends a Write command to the device. You must prepare the output data in exactly the same manner as is specified above for OPTCD=ERASE: begin the output data with WCC, followed by the appropriate device-control characters and orders.

WRITE (OPTCD=CONV) is not available for a 3270 in basic mode. WRITE (OPTCD=ERASE) should be used as described above.

For a READ/WRITE sequence, the write operation is not suspended pending the completion of the solicitation of the device. Instead, the write operation is completed and the solicitation of the device continues. This is true in all cases except when the READ is the first I/O operation. In that case, the write operation is suspended pending the completion of the solicitation of the device to establish a session.

Copy Considerations

With the COPYLBM LDO, an application program can send a "copy" command to copy the contents of a remotely attached 3277 Display Station to any other display station or printer connected to the same control unit. The COPYLBT LDO works like COPYLBM, except that after the data has been copied, ACF/VTAM waits for the "to" device's response and sends an EOT when the response is detected.

Note: *Since this facility is available only for remotely attached devices, you may wish to simulate a copy operation with READ and WRITE macro instructions. Using READ and WRITE macros allows you to use the same program code to handle copy operations for both locally and remotely attached devices.*

Specific information about using these LDOs is given in the DO and LDO macro instruciton descriptions. Briefly, the procedure is this: The LDO is built and its ADDR field set to point to a 3-byte area containing (1) a copy control character, and (2) the second 2 bytes of the "from" device's CID (in that order). A COPYLBT LDO must be used if the Start Print bit (bit 4) in the copy control character is set on. The LDO's LEN field must be set to 3. The address of the LDO is placed in the RPL's AREA field and the CID of the "to" device is placed in the ARG field. The RPL's ACB field must indicate the same ACB that was indicated by the RPL used to connect the "from" and "to" devices.

Note: *The operation will not work if the "from" device's buffer is locked against a copy operation. An application program can lock a "from" device's buffer by placing an attribute of Protected/Alphameric (hexadecimal 60) in buffer location 0 and setting the byte at buffer location 1 to zeros.*

Sense Information

When a READ, WRITE, or DO macro instruction is completed, the SENSE field may contain 2 bytes of status and sense information. If the SENSE field is extracted with SHOWCB, the 2 bytes are right-adjusted in the fullword work area. The possible hexadecimal values of the 2 bytes are:

First Byte[1]	Second Byte[1]	Meaning
C8	40	Device busy
C4	40	Unit specify
C2	40	Device end. This condition is reported if a powered-off 3270 display is powered on and a SOLICIT or READ with OPTCD=SPEC is outstanding for the terminal. The SOLICIT or READ should be reissued.
C1	40	Transmission check
40	C8	Equipment check
40	C4	Data check or bus-out check
40	C2	Control check
40	C1	Operation check
40	60	Command rejected
40	50	Intervention required

[1] Only the rightmost 6 bits of each byte are significant. These bits may be set in combination and should be tested individually.

Note that unit check occurs in the status of locally attached devices for all of the above conditions.

Security Consideration

Note: *Terminal operators of the 3270 should be advised that, unless they enter a logoff prior to actually shutting off the device, under certain circumstances, unauthorized users could gain access to the application program that they were running.*

IBM 3735 Programmable Buffered Terminal

Before using the information in this section, you should be familiar with the description of the 3735 terminal, in *IBM 3735 Programmer's Guide,* GC30-3001.

Data to be sent to the 3735 should be formatted in this manner:

Form Description Program message:

Preliminary message:	N U L	F	N U L	
Data block:	Unpacked FDP data block			
Ending message:	N U L	E	N U L	
Selectric message:	N U L	M	N U L	text
Terminate Communication Mode:	N U L	T	N U L	
Inquiry:	N U L	I	N U L	text
Power down:	N U L	P	N U L	
CPU ID list:	N U L	L	N U L	ID list

Each entry in the ID list contains the CPU ID of all CPUs that may communicate with the 3735 over switched lines. The CPU ID is defined by the user in the CUID operand of the BUILD macro instruction.

Status messages reporting abort conditions are sent from the terminal as

S T X	N U L	S	N U L	s^1	s^2	E T X

but when the block is placed in the application program's input area, the communication control characters are deleted:

N U L	S	N U L	s^1	s^2

When sending Form Description Program (FDP) data blocks to the terminal in ASCII transmission code, the last 6 bytes of the block must each be changed from FF to 7F or else deleted entirely. To remove your dependency on the transmission code used, it is recommended that you always remove the last 6 bytes (the sector flags) from FDP data blocks. You can accomplish this by specifying RECLEN=470 instead of RECLEN=476 in the RPL used for WRITE.

A READ macro instruction must be the first I/O request issued for a 3735 terminal following connection. All other requests are rejected until a READ is issued.

The NTMFLL, NTIMEOUT, and MONITOR processing options are invalid for the 3735 terminal.

IBM 3740 Data Entry System

Before using the information in this section, you should be familiar with the description of the 3740 system in *IBM 3740 Data Entry System Summary*, GA21-9152 (the order numbers of the 3741 and 3742 reference manuals are GA21-9183 and GA21-9184, respectively.

When the 3740 system sends sense data in response to READ, WRITE, or DO macro instructions, ACF/VTAM places the sense data in the RPL's SENSE field.

Request for Test messages of the form

```
S                       S           E
O   %    XYN    addr    T   text    T
H                       X           X
```

are not intercepted by ACF/VTAM, but are passed to the application program in the same manner as any text message with header data: the application program's READ obtains the header portion, with the SOH removed and with bit 7 (DATAFLG=SOH) set on in the RPL's FDBK field; a second READ is required for the text portion.

Data may be sent to the terminal in transparent text mode by specifying PROC=BINARY for the NIB used to connect the terminal. Data sent from the terminal in transparent text mode is placed in the application program's input area unaltered. The application program can determine that the data was sent in transparent text mode by examining the NCP return code in the extended response byte of the SENSE field.

The LGIN, LGOUT, NTMFLL, NTIMEOUT, and MONITOR processing options are invalid for 3740 devices.

IBM 3780 Data Communication Terminal

Before using the information in this section, you should be familiar with the description of the 3780 in *Component Information for the IBM 3780 Data Communication Terminal*, GA27-3063.

Data may be sent to the 3780 in transparent text mode by specifying PROC=BINARY for the NIB used to connect the terminal. Before sending the transparent text blocks on a point-to-point line, the communications controller first obtains the component selection character and inserts it into a block which it sends in nontransparent text mode. The component selection character is supplied by the installation in the ADDR operand of the COMP macro instruction.

Data sent from the device in transparent text mode is placed in the application program's input area unaltered. The application program can determine that the data was sent in transparent text mode by examining the NCP return code in the extended response byte of the SENSE field.

The application program must supply the control sequences required for Horizontal Format Control and Vertical Forms Control.

ACF/VTAM does not compress output data or expand input data.

Test Request Messages (which begin SOH % /) are intercepted by the communications controller. The READ macro instruction that would have moved the message into program storage had the interception not occurred is canceled with RTNCD=12 and FDBK2=2. The terminal must then be disconnected.

Request for Test messages of the form

S				S		E
O	%	XYN	addr	T	text	T
H				X		X

are not intercepted, but are passed on to the application program in the same manner that any text message with header data is passed: the application program's READ obtains the header portion, with the SOH removed and with bit 7 (DATAFLG=SOH) set on in the RPL's FDBK field; a second READ is required for the text portion.

Error recovery messages of the form

S			S		E
O	%	S	T	text	T
H			X		X

are likewise passed on to the application program as two blocks—the first is the header portion with the SOH removed, the second is the text portion, with the STX and ETX removed.

The LGIN, LGOUT, NTMFLL, NTIMEOUT, and MONITOR processing options are invalid for 3780 devices.

IBM System/3 CPU

The System/3 is supported as a BSC station on switched lines, and on both point-to-point and multipoint nonswitched lines. The EBCDIC and ASCII transmission codes are supported.

Data blocks received from the System/3 that contain both header data and text are handled as two blocks: the application program's READ obtains the header portion, with the SOH removed and with bit 7 (DATAFLG=SOH) set on in the RPL's FDBK field; a second READ is required for the text portion.

When the System/3's Continuous Conversation function is active, the CPU engages in a continuous exchange of write operations and conversational replies. To communicate with the System/3 in this manner, you must:

1. Specify PROC=MSG for the NIB used to connect the application program to the System/3 CPU
2. Specify OPTCD=CONV for all WRITE macro instructions
3. Issue WRITE with RECLEN=0 if no data is ready to be sent to the System/3 CPU
4. Be prepared to receive a reply of zero length

The READ, WRITE, WRITELBM, WRITELBT, WRTHDR, WRTPRLG, and WRTNRLG LDOs can be used with the System/3. See the description of the LDO macro instruction.

If leading graphic characters are received as a response to a WRITE macro instruction, the FDBK field is set to indicate this (DATAFLG=LG). The next READ macro instruction directed at the device will obtain the leading graphic characters. If leading graphic characters are received in response to a conversational WRITE (OPTCD=CONV), the leading graphic characters are placed in the data area indicated by the AAREA field of the RPL.

The NTMFLL and MONITOR processing options cannot be used with the System/3.

IBM System/370 CPU

The System/370 is supported on switched or nonswitched point-to-point BSC lines. The EBCDIC and ASCII transmission codes are supported.

Data blocks received from the System/370 that contain both header data and text are handled as two blocks: the application program's READ obtains the header portion, with the SOH removed and with bit 7 (DATAFLG=SOH) set on in the RPL's FDBK field; a second read is required for the text portion.

The READ, WRITE, WRITELBM, WRITELBT, WRTHDR, WRTPRLG, and WRTNRLG LDOs can be used with the System/370. See the description of the LDO macro instruction.

If leading graphic characters are received as a response to a WRITE macro instruction, the FDBK field is set to indicate this (DATAFLG=LG). The next READ macro instruction directed at the device will obtain the leading graphic characters. If leading graphic characters are received in response to a conversational WRITE (OPTCD=CONV), the leading graphic characters are placed in the data area indicated by the AAREA field of the RPL.

The NTMFLL and MONITOR processing options cannot be used with the System/370.

Appendix J. Specifying Session Parameters

When an ACF/VTAM application program issues an OPNDST macro instruction to establish connection with a logical unit, an SNA Bind command containing session parameters is created and sent to the logical unit. The session parameters provide both the application program and the logical unit information about the session and the protocols to be used. Using this information, they can determine whether or not they can operate together in the way in which the session parameters indicate. The session parameters, therefore, provide a method for both participants in a session to be aware of how they are to communicate with each other. For a description of some of the session paraemters and how to use them in an ACF/VTAM application program, see the *ACF/VTAM Macro Language Guide.*

Note: *This appendix is intended to describe fields applicable to session parameters and is* not *intended to be used to locate fields in an SNA Bind command. Since the SNA Bind command is created by ACF/VTAM and not the application program, the Bind command contains fields set by ACF/VTAM which have no significance to the application program. Also, corresponding fields in the session parameters and the Bind command may have different formats and may be located in different positions.*

Session Parameter Fields

The contents of the session parameter fields are described in this section. To understand the nature of some of the bit settings, it is necessary to understand the difference between a primary logical unit and a secondary logical unit in an SNA network. The Bind command, which establishes a session between two logical units, is sent from the primary logical unit (PLU) to the secondary logical unit (SLU). Communication can flow from the primary to the secondary logical unit or from the secondary to the primary logical unit.

The format of the session parameters are:

				FM Usage Field
Bind Format	Reserved	Function Management Profile	Transmission Services Profile	Primary Logical Unit Protocols

↑ 0 ↑ 1 ↑ 2 ↑ 3 ↑ 4

Function Management Usage Field (cont.)		TS Usage Field
Secondary Logical Unit Protocols	Common Logical Unit Protocols	Secondary Logical Unit Send Pacing Count

↑ 4 ↑ 5 ↑ 7 ↑ 8

Transmission Services Usage Field (cont.)			
Secondary Logical Unit Receive Pacing Count	Secondary Logical Unit Send Maximum Request Unit Size	Primary Logical Unit Send Maximum Request Unit Size	Primary Logical Unit Pacing Count

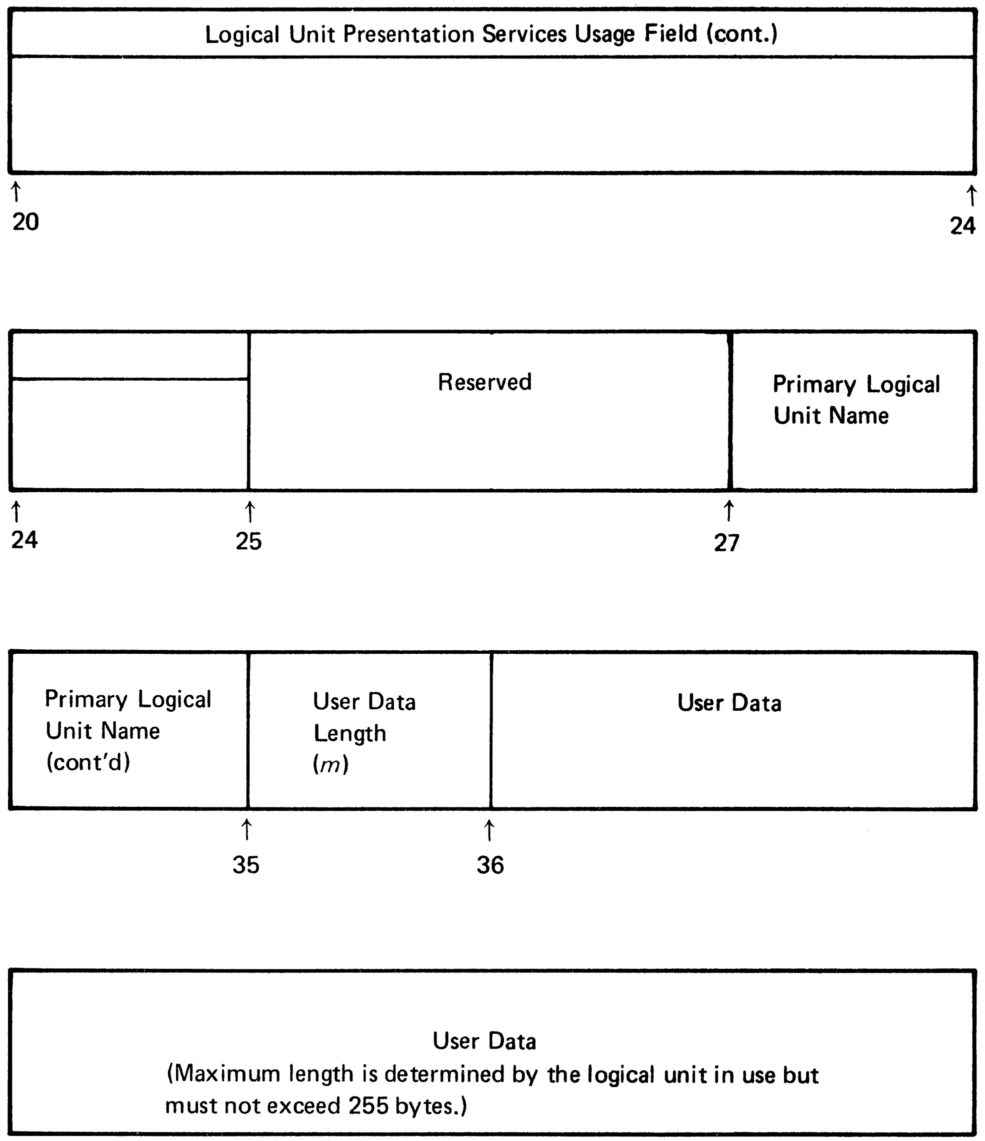
↑ 8 ↑ 9 ↑ 10 ↑ 11 ↑ 12

TS Usage Field	Logical Unit Presentation Services Profile	LU Presentation Services Usage
Primary Logical Unit Receive Pacing Count		

↑ 12 ↑ 13 ↑ 14 ↑ 16

Logical Unit Presentation Services Usage Field (cont.)
(The format and content of this field are determined by the logical unit presentation services profile; see the description of this field for the formats that are available.)

↑ 16 ↑ 20


Logical Unit Presentation Services Usage Field (cont.)
20
24
Reserved
Primary Logical Unit Name
24
25
27
Primary Logical Unit Name (cont'd)
User Data Length (*m*)
User Data
35
36
User Data
(Maximum length is determined by the logical unit in use but must not exceed 255 bytes.)

Function Management Profile

The function management profile identifies a predefined set of protocol rules. Each profile represents a different set of rules. Within each profile some of the protocol rules are mandatory, some are optional, and some do not apply. The profiles that have optional rules, require the use of the function management usage field to indicate how the optional rules are to be implemented. The following profiles are available to the ACF/VTAM application program and can be specified in the function management profile field.

Bit Setting (Byte 1) 0123	 4567	 Meaning
0000	0010	Function management profile 2 is to be used. (This profile applies to 3270 terminals only.)
0000	0011	Function management profile 3 is to be used.
0000	0100	Function management profile 4 is to be used.

The protocol rules that apply to each of these function management profiles are:

Profile 2 (3270 Only)

The application program (primary logical unit):

- May not use multiple request chains
- May use either immediate or delayed request mode
- May request exception only, definite only, or both exception and definite responses to requests
- May not use compression
- May send End Bracket indicators if brackets are used
- May not use function management headers
- May use brackets
- Must use bracket termination rule 2 if brackets are used
- May use an alternate code
- Must use full duplex (FDX) transaction mode
- Must be responsible for error recovery
- May initiate brackets as bidder if brackets are used
- May not send data flow control commands
- May use immediate or delayed response mode

The logical unit (secondary logical unit):

- May not use multiple request chains
- Must use delayed request mode
- Must not request responses to requests
- May not use compression
- Must not send End Bracket indicators if brackets are used
- May not use function management headers
- May use brackets
- Must use bracket termination rule 2 if brackets are used
- May use an alternate code
- Must use full duplex (FDX) transaction mode
- May not be responsible for error recovery
- May initiate brackets as first speaker if brackets are used
- May not send data flow control commands
- Must use immediate response mode

Profile 3

The application program (primary logical unit) and the logical unit (secondary logical unit):

- May use multiple element chains
- May use either immediate or delayed request mode
- May request exception only, definite only, both exception and definite, or no response to messages or chains of messages
- May use compression if function management headers are used
- May send End Bracket indicators if brackets are used
- May use function management headers

- May use brackets
- May use either bracket termination rule 1 or 2 if brackets are used
- May use an alternate code
- May use half duplex flip-flop, half duplex contention, or full duplex transaction mode
- May be responsible for error recovery (either the primary logical unit only or the sender may be responsible for error recovery)
- May initiate brackets if brackets are used (if the primary logical unit is to initiate brackets as first speaker, the secondary may only initiate brackets as bidder, or if the secondary is first speaker, the primary must be bidder)
- May initiate change-direction protocol or win contention if a half duplex transaction mode is used (either the primary or the secondary logical unit, not both, may initiate change direction or win contention)
- May send Bid, Cancel, Chase, LUS, RSHUTD, RTR, SHUTC, SHUTD, or Signal data flow control commands, as appropriate
- Must use immediate response mode
- May use delayed control mode

Profile 4

The application program (primary logical unit) and the logical unit (secondary logical unit):

- May use multiple element chains
- May use either immediate or delayed request mode
- May request exception only, definite only, both exception and definite, or no response to messages or chains of messages.
- May use compression if function management headers are used
- May send End Bracket indicators if brackets are used
- May use function management headers
- May use brackets
- May use either bracket termination rule 1 or 2 if brackets are used
- May use alternate code
- May use half duplex flip-flop, half duplex contention, or full duplex transaction mode
- May be responsible for error recovery (either the primary logical unit or the sender may be responsible for error recovery)
- May initiate brackets if brackets are used (if the primary logical unit is to initiate brackets as first speaker, the secondary logical unit may only initiate brackets as bidder or if the secondary is first speaker, the primary must be bidder)
- May initiate change-direction protocol or win contention if a half duplex transaction mode is used (either the primary or secondary logical unit, not both, may initiate change direction or win contention)
- May send Bid, Cancel, Chase, LUS, QC, QEC, RELQ, RSHUTD, RTR, SHUTC, SHUTD, or Signal data flow control commands as appropriate
- Must use immediate response mode
- May use delayed control mode

Figure J-1 shows the bits in the function management usage field that are used to specify the protocol rules for a session. Figure J-2 summarizes the data flow control commands that can be used in each profile.

Logical Unit	Function Management Usage Field Bits	Profile 2[1]	 3	 4
Primary	Chaining Use	0	Opt	Opt
	Request Mode Selection	Opt	Opt	Opt
	Chain Response	Opt	Opt	Opt
	Compression Indicator	0	Opt	Opt
	Send End Bracket Indicator	1	Opt	Opt
Secondary	Chaining Use	0	Opt	Opt
	Request Mode Selection	1	Opt	Opt
	Chain Response	00	Opt	Opt
	Compression Indicator	0	Opt	Opt
	Send End Bracket Indicator	0	Opt	Opt
Common (Primary and Secondary)	FM Header Usage	0	Opt	Opt
	Brackets	Opt	Opt	Opt
	Bracket Termination Rules	0	Opt	Opt
	Alternate Code Set Indicator	Opt	Opt	Opt
	Send/Receive Mode	00	Opt	Opt
	Recovery Responsibility	0	Opt	Opt
	Bracket First Speaker	0	Opt	Opt
	Contention Resolution	0	Opt	Opt

Key: Opt — This bit may be set to 0 or 1. The optional protocols may be further restricted by a logical unit profile that may also be set.

[1] This profile applies to 3271s, 3272s, and 3275s only.

Figure J-1. Bit Settings in the Function Management Usage Field for Each Function Management Profile

Transmission Services Profile

The transmission services profile identifies a predefined set of session control commands that can be used in a session. Each profile represents a different set of session control commands. The profiles that are available to the ACF/VTAM application program and can be specified in the transmission services field are listed below.

Bit Setting (Byte 2) 0123 4567	Meaning
0000 0010	Transmission services profile 2 is to be used. (This profile applies to 3270 terminals only.)
0000 0011	Transmission services profile 3 is to be used.
0000 0100	Transmission services profile 4 is to be used.

The session control commands that apply to each of these profiles are shown in Figure J-3.

			Profile	
Logical Unit	Data Flow Control Command	2[1]	3	4
Common (Primary and Secondary)	Bid		Opt[2]	Opt[2]
	Cancel		Opt	Opt
	Chase		Opt	Opt
	LUS		Opt[3]	Opt
	QC			Opt
	QEC			Opt
	RELQ			Opt
	RSHUTD		Opt[3]	Opt[3]
	RTR		Opt[2]	Opt[2]
	SHUTC		Opt[3]	Opt[3]
	SHUTD		Opt[4]	Opt[4]
	Signal		Opt	Opt

Key: Opt — This command may be used.
Blank— This command must not be used.

[1] This profile applies to 3270s only.

[2] These commands may be used only if brackets are used.

[3] These commands are permitted from the secondary logical to the primary logical unit only.

[4] These commands are permitted from the primary to the secondary logical unit only.

Figure J-2. Data Flow Control Commands for Each Function Management Profile

		Profile	
Session Control Command	2[1]	3	4
Clear	Req	Req	Req
RQR			Opt
SDT		Req	Req
STSN			Opt

Key: Req — This command must be used. The required commands may be issued by ACF/VTAM on behalf of the application program.
Opt — This command may be used.
Blank— This command must not be used.

[1] This profile applies to 3270s only.

Figure J-3. Session Control Commands for Each Transmission Services Profile

Function Management Usage Field

The function management usage field is used to supplement the protocol rules defined by the function management profile. See the description of the function management profile field for an explanation of when and how to use this field. When the function management usage field is used, it is divided into three parts: the primary logical unit protocols (byte 3), the secondary logical unit protocols (byte 4), and the common logical unit protocols (bytes 5 and 6). The primary logical unit protocols apply to the primary application program, the secondary logical unit protocols apply to the secondary logical unit, and the common logical unit protocols apply to both. Bytes 3 and 4 have the same format; however, different bits may be on or off depending upon the protocol to be used and how it applies to the specific logical unit being described by the byte. The bits that can be set in the function management usage field are listed below.

Bit Setting (Bytes 3 and 4)		
0 1 2 3	**4 5 6 7**	**Meaning**
0 . . .	. . . .	Chaining Use Bit. The primary or the secondary will send single element chains only.
1 . . .	. . . .	Chaining Use Bit. The primary or the secondary may send multiple element chains.
. 0 . .	. . . .	Request Control Mode Selection Bit. The primary or the secondary will use immediate request mode only (that is, only one request for a definite response will be outstanding at any one time); the sender will not send further normal-flow requests until the response has been received.
. 1 . .	. . . .	Request Control Mode Selection Bit. The primary or the secondary will use delayed request mode (that is, one or more requests for definite responses may be outstanding at any one time). The responder may use immediate or delayed response mode (that is, the requests for definite responses may be responded to in any order depending on the function management profile that was specified.
. . 0 0	. . . .	Chain Response Bits. The primary or the secondary does not require any responses to chain.
. . 0 1	. . . .	Chain Response Bits. The primary or the secondary requires only exception responses to chains.
. . 1 0	. . . .	Chain Response Bits. The primary or the secondary requires definite responses to chains.
. . 1 1	. . . .	Chain Response Bits. The primary or the secondary may request either definite or exception responses to chains.
. . . .	. . 0 .	Compression Indicator Bit. The primary or the secondary will not use compression (that is, remove extraneous blank characters from data before it is sent).
. . . .	. . 1 .	Compression Indicator Bit. The primary or the secondary may use compression (that is, remove extraneous blank characters from data before it is sent). This bit setting may not be used if the function management header bit is set to 0.
. . . .	. . . 0	Send End Bracket Indicator Bit. The primary or the secondary will not send an End Bracket indicator. If the brackets bit is set to 1, this bit may not be set to 0 in both byte 3 and byte 5.
. . . .	. . . 1	Send End Bracket Indicator Bit. The primary or the secondary **may send an** End Bracket indicator. This bit setting may not be used if the brackets bit is set to 0.
. . . .	x x . .	Reserved.

Bit Setting		
(Byte 5)		
0 1 2 3	**4 5 6 7**	**Meaning**
.0..	....	Function Management Header Usage Bit. The primary and the secondary will not use function management headers.
.1..	....	Function Management Header Usage Bit. The primary and the secondary may use function management headers.
..0.	....	Brackets Usage Bit. The primary and the secondary will not use brackets.
..1.	....	Brackets Usage Bit. The primary and the secondary may use brackets.
...0	....	Bracket Termination Rule Selection Bit. The primary and the secondary will use bracket termination rule 2 (that is, the bracket will be unconditionally terminated when the chain that indicates the end of a bracket is processed). This bit must be set to 0 if the brackets bit is set to 0.
...1	....	Bracket Termination Rule Selection Bit. The primary and the secondary will use bracket termination rule 1 (that is, when terminating an existing bracket, the bracket will be terminated unconditionally unless the last message of a chain that indicates the end of a bracket requests a definite response. In that case the bracket will not be terminated unless a positive response is processed). This bit setting may not be used if the brackets bit is set to 0.
....	0...	Alternate Allowed Code Set Bit. Only the standard code will be used in this session.
....	1...	Alternate Allowed Code Set Bit. Either the standard or the alternate code may be used in this session.
x...	.xxx	Reserved.

Bit Setting		
(Byte 6)		
0 1 2 3	**4 5 6 7**	**Meaning**
00..	....	Send/Receive Mode Selection Bits. The primary and the secondary will use full duplex (FDX) communication.
01..	....	Send/Receive Mode Selection Bits. The primary and the secondary will use half duplex contention (HDX-CON) communication. The contention resolution bit may also be set.
10..	....	Send/Receive Mode Selection Bits. The primary and the secondary will use half duplex flip-flop (HDX-FF) communication. The contention resolution bit may also be set.
11..	....	Send/Receive Mode Selection Bits. The primary and the secondary will use simplex (master/slave) communication.
..0.	....	Recovery Responsibility Bit. The primary is responsible for error recovery.
..1.	....	Recovery Responsibility Bit. The sender is responsible for error recovery.
...0	....	Brackets First Speaker Bit. The secondary will act as first speaker.
...1	....	Brackets First Speaker Bit. The primary will act as first speaker.
....	...0	Contention Resolution Bit. The secondary will send data first after an SDT (HDX-FF) or the secondary will win a contention with the primary (HDX-CON).
....	...1	Contention Resolution Bit. The primary will send data first after an SDT (HDX-FF) or the primary will win a contention with the secondary (HCX-CON).
....	xxx.	Reserved.

Transmission Services Usage Field

Request Unit Size

The session parameters specify the maximum length of request units that can be sent by the logical units. This information is divided into two parts: the secondary logical unit send request unit size (byte 9) and the primary logical unit send request unit size (byte 10). Both bytes have the same format; however, they may be set to different values depending upon the requirements of the logical units. The bits that can be set are listed below.

Bit Setting (Bytes 9 and 10)		
0 1 2 3	**4 5 6 7**	**Meaning**
0. . .	. . . .	(byte 9) 6K bytes is the default size of the request unit that can be sent.
0. . .	. . . .	(byte 10) There is no limit specified for the size of the request unit that can be sent.
1 0 0 0 through 1 1 1 1	. . . .	This is the mantissa (m) of the formula m (2^n) used to determine the length of request units that can be sent by the primary or secondary logical unit.
. . . . through	0 0 0 0 1 1 1 1	This is the exponent (n) of the formula m (2^n) used to determine the maximum length of request units that can be sent by the primary or secondary logical unit.

Pacing Count

The pacing count fields permit a user to control the rate of data flow through the network path joining an ACF/VTAM application and a logical unit (including another ACF/VTAM application program).

Bit Setting (Bytes 7, 8, 11, and 12)		
0 1 2 3	**4 5 6 7**	**Meaning**
0 0 0 0 through 0 0 1 1	0 0 0 0 1 1 1 1	The pacing count that was specified when the network was defined to ACF/VTAM.

Byte	Meaning
7	Secondary send pacing count
8	Secondary receive pacing count
11	Primary send pacing count
12	Primary receive pacing count

Note: *Only byte 12 can be specified by the primary application program.*

Logical Unit Presentation Services Profile

The logical unit presentation services profile identifies a predefined type of logical unit. Each profile represents a different type of logical unit that uses a unique subset of the SNA defined protocols and data streams for its operation. Both the primary and the secondary logical units must be able to operate with the special functions if they are to be used. The logical unit presentation services usage field is used in conjunction with the presentation services profile field. The profile field determines the format of the usage field; the usage field is used to specify optional protocols or data streams that are applicable to the profile. The logical unit presentation services profiles that can be specified are listed below.

Bit Setting (Byte 13)		
0 1 2 3	**4 5 6 7**	**Meaning**
. 0 0 0	0 0 0 0	Logical unit presentation service profile 0 is to be used.
. 0 0 0	0 0 0 1	Logical unit presentation service profile 1 is to be used.
. 0 0 0	0 0 1 0	Logical unit presentation service profile 2 is to be used.
. 0 0 0	0 0 1 1	Logical unit presentation service profile 3 is to be used.
x. . .	. . . .	Reserved.

The subsets of protocols and data streams that apply to each of these logical unit presentation services profiles are:

Profile 0

Use of a set of protocols and data streams agreed upon by the logical units involved. SNA does not define them.

Profile 1

- Use of predefined function management headers to identify a variety of data set types and controls that can be sent and received
- Use of an SNA character string (SCS) and a defined set of SNA protocols for a keyboard/printer device

Profile 2

Use of a 3270 data stream and a defined set of SNA protocols for a keyboard/display device

Profile 3

Use of a 3270 data stream and a defined set of SNA protocols for a printer

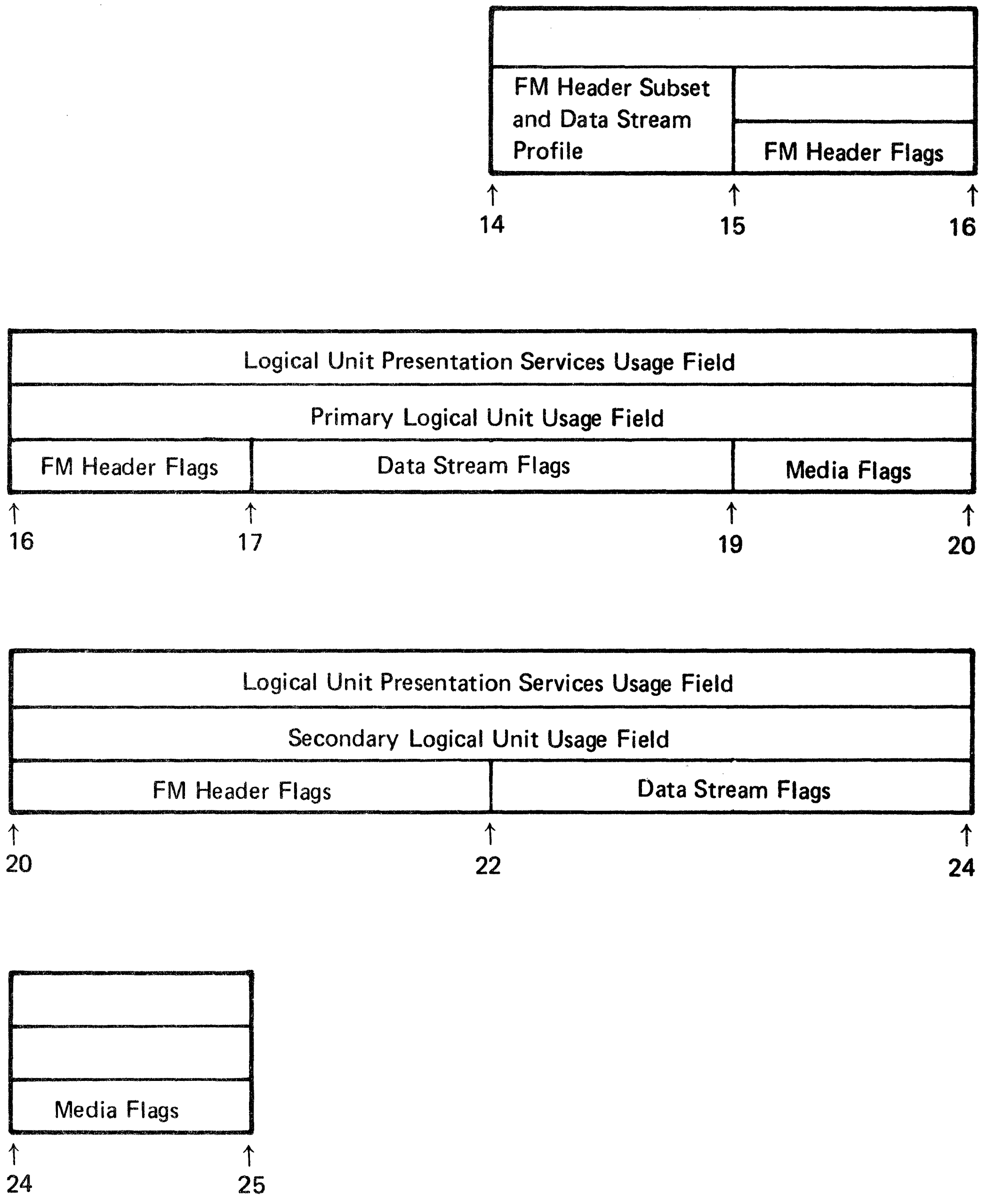
Logical Unit Presentation Services Usage Field

The logical unit presentation services usage field contains information describing the subset of SNA protocols and data streams for the type of logical unit being used. Each logical unit has a presentation services profile associated with it. This profile identifies any of the special functions that may be available and determines the format of this field. See the description of the logical unit presentation services profile field for an explanation of the profiles. The format of the logical unit presentation services usage field that corresponds to each profile is as follows:

Profile 0

Undefined. The two logical units in the session are allowed to define this field in any way that is mutually agreeable to them.

Profile 1


FM Header Subset and Data Stream Profile
FM Header Flags
14
15
16
Logical Unit Presentation Services Usage Field
Primary Logical Unit Usage Field
FM Header Flags
Data Stream Flags
Media Flags
16
17
19
20
Logical Unit Presentation Services Usage Field
Secondary Logical Unit Usage Field
FM Header Flags
Data Stream Flags
20
22
24
Media Flags
24
25

Function Management Header Subset and Data Stream Profile: This field identifies a predefined set of function management header and data stream subsets. Each subset specifies the types of data sets and data set controls and the types of data streams that can be handled. The subset profiles that are available are listed below.

Bit Setting (Byte 14) 0 1 2 3	 4 5 6 7	 Meaning
0 0 0 1	. . . .	Function management header subset 1 is to be used.
0 0 1 0	. . . .	Function management header subset 2 is to be used.
0 0 1 1	. . . .	Function management header subset 3 is to be used.
. . . .	0 0 0 0	Data stream subset 0 is to be used.
. . . .	0 0 0 1	Data stream subset 1 is to be used.

Function Management Header Subset Flags: These flags identify the types of data set and data sets controls that can be used. They are specified for the primary logical unit (bytes 15 and 16) and for the secondary logical unit (bytes 20 and 21). Both sets of bytes have the same format; however, different bits may be set for the primary and secondary. If the function management usage bit in the function management usage fields is set to 0, these flags may not be used and should be set to 0. The function management header subset flags that can be set are listed below.

Bit Setting
(Bytes 15 or 20)

0123	**4567**	**Meaning**
Function Management Header Subset 1, 2, or 3		
0...	....	The transmission may be interrupted once to send to another logical unit (two destinations are outstanding).
1...	....	The transmission may be interrupted twice to send to another logical unit (three destinations are outstanding).
.0..	....	The primary and the secondary must not send compacted data.
.1..	....	The primary and the secondary may send compacted data. If this bit is used, it must be set to 1 for both the primary and the secondary.
..0.	....	The primary and the secondary must not send PDIR.
..1.	....	The primary and the secondary may send PDIR.
...x	xxxx	Reserved (for subsets 1 and 2 only)
Function Management Header Subset 3		
...0	....	The primary or the secondary will not send keyed direct data sets with Add or Erase Record headers using RECID headers.
...1	....	The primary or the secondary may send keyed direct data sets with Add or Erase Record headers using RECID headers.
....	0...	The primary or the secondary will not send sequential data sets with Add.
....	1...	The primary or the secondary may send sequential data sets with Add.
....	.0..	The primary or the secondary will not send addressed direct data sets that are accessed sequentially with Add, Note, and Note Reply in the opposite direction.
....	.1..	The primary or the secondary may send addressed direct data sets that are accessed sequentially with Add, Note, and Note Reply in the opposite direction.
....	..0.	The primary or the secondary do not support series IDs (with status in reply).
....	..1.	The primary or the secondary support series IDs (with status in reply).
....	...0	The primary or the secondary does not support Add Replicate and Replace Replicate.
....	...1	The primary or the secondary supports Add Replicate and Replace Replicate.

Bit Setting
(Bytes 16 or 21)

0123	**4567**	**Meaning**
Function Management Header Subset 1 or 2		
xxxx	xxxx	Reserved.
Function Management Header Subset 3		
.0..	....	The primary or the secondary does not support query for data sets.
.1..	....	The primary or the secondary supports query for data sets.
..0.	....	The primary or the secondary does not support Create, Scratch, and Scratch All data sets.
..1.	....	The primary or the secondary supports Create, Scratch, and Scratch All data sets.
...0	....	The primary or the secondary does not support Execute FP.
...1	....	The primary or the secondary supports Execute FP.
x...	....	Reserved.

Data Stream Subset Flags: These flags identify the type of data stream that can be used. They are specified for the primary logical unit (bytes 17 and 18) and for the secondary logical unit (bytes 22 and 23). Both bytes have the same format; however, different bits may be set for the primary and secondary. The data stream subset flags that can be set are listed below.

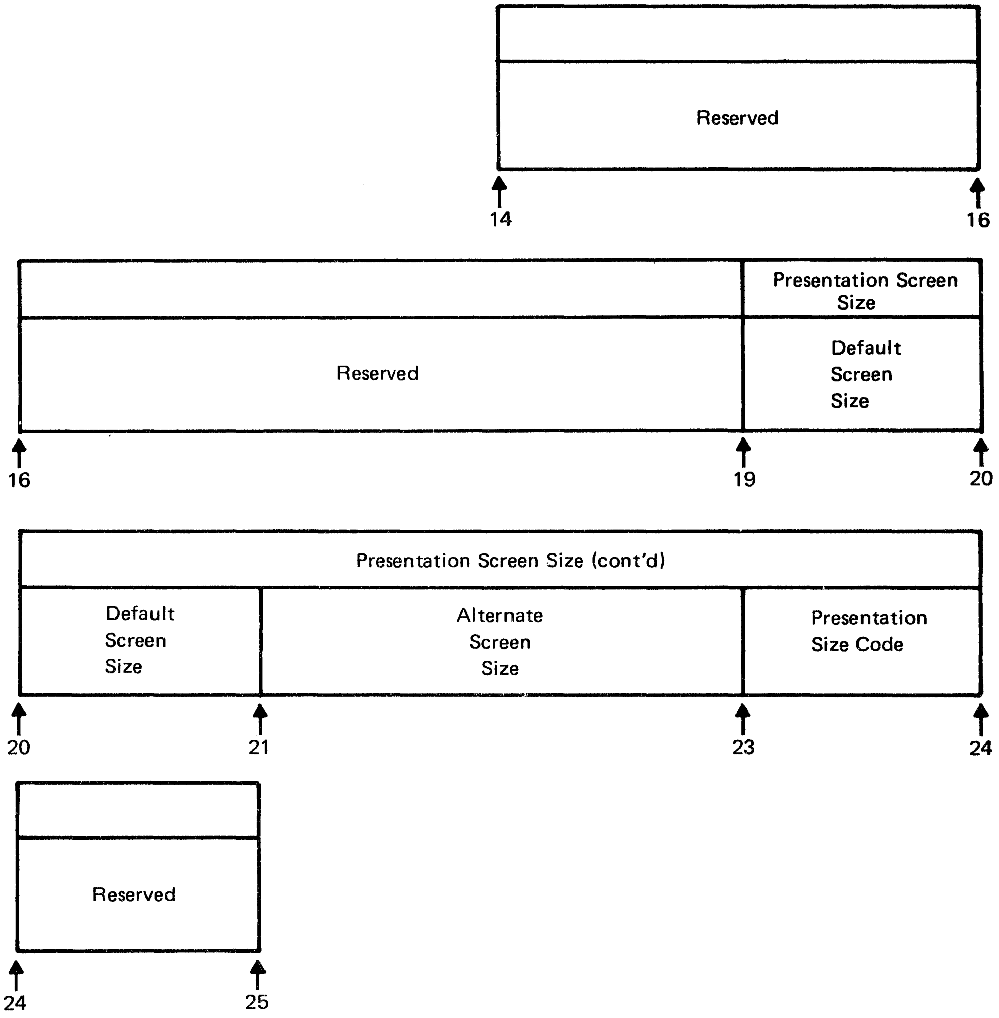
Bit Setting (Bytes 17 or 22)		
0 1 2 3	**4 5 6 7**	**Meaning**
0 . . .	. . . .	The primary or the secondary will not send an interactive data stream (BS, CR, LF, HT, VT, ENP, and INP).
1 . . .	. . . .	The primary or the secondary may send an interactive data stream (BS, CR, LF, HT, VT, ENP, and INP).
. 0 . .	. . . .	The primary or the secondary will not send a horizontal format data stream (SHF).
. 1 . .	. . . .	The primary or the secondary may send a horizontal format data stream (SHF).
. . 0 .	. . . .	The primary or the secondary will not send a vertical tab data stream (SVF).
. . 1 .	. . . .	The primary or the secondary may send a vertical tab data stream (SVF).
. . . 0	. . . .	The primary or the secondary will not send a vertical select data stream (SVF(*channels*) and SEL).
. . . 1	. . . .	The primary or the secondary may send a vertical select data stream (SVF(*channels*) and SEL).
. . . .	. . . 0	The primary or the secondary will not send a transparency data stream (TRN and IRS).
. . . .	. . . 1	The primary or the secondary may send a transparency data stream (TRN and IRS).
. . . .	x x x .	Reserved.

Bit Setting (Bytes 18 and 23)		
0 1 2 3	**4 5 6 7**	**Meaning**
x x x x	x x x x	Reserved.

Media Flags: These flags identify the types of physical recording media for which the data stream can be formatted. They are specified for the primary logical unit (byte 19) and for the secondary logical unit (byte 24). Both bytes have the same format; however, different bits may be set for the primary and secondary. The media flags that can be set are listed below.

Bit Setting (Bytes 19 or 24)		
0 1 2 3	**4 5 6 7**	**Meaning**
0 . . .	. . . .	The primary or the secondary will not use document output.
1 . . .	. . . .	The primary or the secondary may use document output.
. 0 . .	. . . .	The primary or the secondary will not use card format.
. 1 . .	. . . .	The primary or the secondary may use card format.
. . 0 .	. . . .	The primary or the secondary will not use exchange media format.
. . 1 .	. . . .	The primary or the secondary may use exchange media format.
. . . 0	. . . .	The primary or the secondary will not use disk, data management format.
. . . 1	. . . .	The primary or the secondary may use disk, data management format.
. . . .	x x x x	Reserved.

Profile 2 and 3



Presentation Space Size: This field (bytes 19 through 23) contains the default and alternate screen sizes and a Presentation Size Code field. These fields contain the following values:

Default Screen Size
(Byte 19) . . . contains the number of rows in the default screen size
(Byte 20) . . . contains the number of columns in the default screen size
Alternate Screen Size
(Byte 21) . . . contains the number of rows in the alternate screen size
(Byte 22) . . . contains the number of columns in the alternate screen size
Presentation Size Code
(Byte 23) . . . identifies the screen matrix for display devices or indicates to use either the default or alternate screen size. The matrix sizes that can be specified are:

Bit Setting 0123 4567	**Meaning**
0000 0000	A matrix size is not defined
0000 0001	A matrix size of 12 by 40 bytes is to be used
0000 0010	A matrix size of 24 by 80 bytes is to be used
0111 1110	A matrix size as described by the default field is to be used.
0111 1111	Either the default or the alternate screen size is to be used.

Logical unit presentation services profile does not require the use of this field.

User Data Length

This field specifies the length of the user data field. The value contained in this field can be any hexadecimal value from X'00' to X'FF'. If X'00' is specified there is no user data.

User Data

This field can be used to send data to the secondary logical unit as a part of the Bind command.

The Bind Area Format and DSECT

This section describes the format and DSECT (ISTDBIND) of the bind area that can be used in an ACF/VTAM application program to create the session parameters that will accompany an OPNDST or that will be received in a SCIP exit routine. Using the bind area in conjunction with an OPNDST macro instruction, the application program can override or change any of the session parameters that may have been obtained from a logon mode table or a pending logon. This gives the application program the ability to tailor predefined session parameters to its own needs before initiating connection with the logical unit. The application program can also use the DSECT to inspect the session parameters it receives in its SCIP exit routine.

The bind area is identified by the BNDAREA field of the NIB. It may be either an area in the application program specifically created for this purpose or it may be the AREA field of the RPL that was used by an INQUIRE with OPTCD=SESSPARM macro instruction. The format map and DSECT description are an aid to examining or setting up the contents of a bind area (Figures J-4 through J-9). The IBM-supplied DSECT ISTBIND is provided as part of the system macro library (the source statement library in DOS/VS or SYS1.MACLIB in OS/VS). The DSECT can be included in an ACF/VTAM application program by including the ISTDBIND macro instruction in the program.

A DSECT is an overlay (map) containing labels that correspond to field displacements, bit settings, and byte values. A field displacement is the displacement of a field from the beginning of the bind area. It is defined by the DS (or ORG) instructions in the DSECT. A bit setting is an assembler EQU instruction (such as LABEL1 EQU X'80') that identifies a particular bit or set of bits. The label in the EQU instruction could be used as the immediate data in a TM instruction, for example. A byte value is also an assembler EQU instruction (such as LABEL2 EQU X'23') that identifies a particular value in a byte. This label could be used as the immediate data in a CLI instruction, for example.

The general manner in which DSECTs are used is described in "The DSECT Instruction" section of *OS/VS and DOS/VS Assembler Language* GC33-4010.

To avoid the risk of duplicating DSECT labels in your program, avoid using any label that begins with the characters BIN. Be very careful to set all relevant bits and fields. You may notice that the bind area DSECT is more extensive than is shown here. The format maps and DSECT descriptions in this section do not include those fields that are set by ACF/VTAM and not by the application program or that are currently undefined in SNA; all such fields are marked "reserved".

Displacement					
Dec	*Hex*				
0	0	Bind Format Reserved	FM Profile FMPROF (BINFM)	TS Profile TSPROF (BINTS)	Primary LU Protocols PRIPROT (BINPRIP)
4	4	Secondary LU Protocols SECPROT (BINSECP)	Common LU Protocols COMPROT (BINCMNP)	(BINCMNP2)	Secondary Send Pacing Count (BINAPACE)
8	8	Secondary Receive Pacing Count (BINRPACE)	Maximum Request Unit Send Sizes RUSIZES Secondary LU (BINSRUSZ)	Primary LU (BINPRUSZ)	Primary Send Pacing Count (BINSPACE)
12	C	Primary Receive Pacing Count (BINBPACE)	Logical Unit Profile PSERVIC (BINLUP)	Logical Unit Presentation Services Usage Field PSERVIC (BINPSCHR)	
16	10				
20	14				
24	18		Cryptographic control (BINCRCTL)	Reserved	
28	1C	Name of Primary Logical Unit (BINPRIM)			
32	20				User Data Length (BINUSEL)
36	24	User Data (BINUSE)			

See BINPSCHR (Figures J-7, J-8 and J-9)

Figure J-4. The Format of BNDAREA (ISTDBIND)

Displacement	ISTDBIND Field Description	Information Available to SCIP Exit Routine	Information Available to INQUIRE (OPTCD= SESSPARM)[3]	Application Program Can Specify in OPNDST (in NIB BNDAREA)	ACF/VTAM Sets at OPNDST (User Data Overlaid)
–	Bind RU code (X'31')[2]	No	No	No	Yes
0	Bind format and type	Yes	Yes	No	Yes
1	FM profile	Yes	Yes	Yes	No
2	TS profile	Yes	Yes	Yes	No
3	PLU protocols	Yes	Yes	Yes	No
4	SLU protocols	Yes	Yes	Yes	No
5 and 6	Common protocols	Yes	Yes	Yes	No
7	SLU send pacing count	Yes	Yes	No	Yes
8	SLU receive pacing count	Yes	Yes	No	Yes
9	SLU maximum send RU size-mantissa/exponent	Yes	Yes	Yes	No[1]
10	PLU maximum send RU size-mantissa/exponent	Yes	Yes	Yes	No[1]
11	PLU send pacing count	Yes	Yes	No	Yes
12	PLU receive pacing count	Yes	Yes	Yes	No[4]
13-24	LU presentation services	Yes	Yes	Yes	No
25[6]	Cryptographic control	Yes	Yes	Yes	Yes[7]
26	Reserved				
27-34	PLU name	Yes	No	No	Yes
35	User data length[5]	Yes	Yes	Yes	No
36-	User data[5]	Yes	Yes	Yes	No

[1] This RU size specified should be no larger than the size specified in the pending logon.

[2] The Bind Request Unit Code (X'31') is not included in the ISTDBIND DSECT.

[3] Certain information is available to an INQUIRE (OPTCD=SESSPARM) for a pending logon which is not available for other types of INQUIREs for session parameters. This information is the Bind type and user data.

[4] The PLU receive pacing count is not overlaid unless the application program sets BINBPACE to zero in BNDAREA. The value specified should be no larger than the value specified in the associated pending logon.

[5] The user data and user data length have different meanings depending on when they are examined:
(a) For INQUIRE (OPTCD=SESSPARM) for a pending logon, they represent the user data field specified in the original logon. For other types of INQUIRE, the length field is zero and there is no user data.
(b) For OPNDST ACCEPT or ACQUIRE specifying a BNDAREA, they specify the user data field to be sent in a Bind to the secondary logical unit. If BNDAREA is not specified, no user data is sent to the logical unit.
(c) For a SCIP exit routine scheduled by the receipt of a Bind command, they specify the data received in that Bind command.

[6] Applies only to the Encrypt/Decrypt Feature of ACF/VTAM.

[7] ACF/VTAM will change this field if a higher level of cryptography is required for session establishment.

Figure J-5. Mapping Information for the BNDAREA DSECT (ISTDBIND)

BNDAREA DSECT: ISTDBIND – FORMAT 0

Field	DSECT DS or ORG label	DSECT EQU label	Value	Meaning	OS/VS or DOS/VS Displacement	
					Dec	Hex
Bind Format and Type	BINFMTY	BINFMT0	X'00'	Format 0 (This half-byte is set by ACF/VTAM)	0	0
		BINTYPE		Bind type (This half-byte is reserved)		
FM Profile	BINFM				1	1
TS Profile	BINTS	BINTS0	X'00'	ID only and no reset state	2	2
		BINTS1	X'01'	ID only and no reset state		
		BINTS2	X'02'	Sequence numbers and no reset state		
		BINTS3	X'03'	Sequence numbers and reset state		
		BINTS4	X'04'	Sequence numbers and reset state (STSN and RQR)		
Primary LU Protocol	BINPRIP	BINPCHN	X'80'	Bit on = multiple message chains	3	3
				Bit off = only single message chains used		
		BINPMCH	X'40'	Bit on = multiple outstanding chains; delayed request mode		
				Bit off = single outstanding chains only; immediate request mode		
		BINNYRSP	X'30'	Either definite or exception response		
		BINDFRSP	X'20'	Definite response		
		BINEXRSP	X'10'	Exception responses		
		BINNORSP	X'00'	No response		
			X'0C'	Reserved		
		BINPCMP	X'02'	Bit on = compression may be used		
				Bit off = compression must not be used		
		BINPSEB	X'01'	Bit on = primary may send End Bracket indicator		
				Bit off = primary will not send End Bracket indicator		
Secondary LU Protocol	BINSECP	BINSCHN	X'80'	Bit on = multiple message chains	4	4
				Bit off = only single message chains used		
		BINSMCH	X'40'	Bit on = delayed request mode		
				Bit off = immediate request mode		
		BINNYRSP	X'30'	Either definite or exception responses		
		BINDFRSP	X'20'	Definite response		
		BINEXRSP	X'10'	Exception responses		
		BINNORSP	X'00'	No response		
			X'06'	Reserved		
		BINSCMP	X'02'	Bit on = compression may be used		
				Bit off = compression must not be used		
		BINSSEB	X'01'	Bit on = secondary may send End Bracket indicator		
				Bit off = secondary will not send End Bracket indicator		
Common LU Protocol	BINCMNP		X'80'	Reserved	5	5
		BINFMHD	X'40'	Bit on = function management headers may be used		
				Bit off = function management headers must not be used		
		BINBRAK	X'20'	Bit on = brackets will be used		
				Bit off = brackets will not be used		
		BINBKTR	X'10'	Bit on = conditional bracket termination (Termination Rule 1)		
				Bit off = unconditional bracket termination (Termination Rule 2)		
		BINALT	X'08'	Bit on = alternate code may be used		
				Bit off = alternate code must not be used		
			X'07'	Reserved		

Figure J-6 (Part 1 of 2). The BNDAREA DSECT (ISTDBIND)

Field	DSECT DS or ORG label	DSECT EQU label	Value	Meaning	OS/VS or DOS/VS Displacement	
					Dec	Hex
	BINCMNP2	BINFMTRM		FM Transaction mode	6	6
		BINMSTSL	X'C0'	Simplex mode		
		BINHDXFF	X'80'	Half-duplex flip-flop mode		
		BINHDXC	X'40'	Half-duplex contention mode		
		BINRCVR	X'20'	Bit on = sender of message is responsible for recovery Bit off = primary is responsible for recovery		
		BINBKFS	X'10'	Bit on = primary is first speaker in bracket mode Bit off = secondary is first speaker in bracket mode		
		BINFLDPX	X'00'	Full-duplex transaction mode		
			X'0E'	Reserved		
		BINCONR	X'01'	Bit on = for half-duplex flip-flop mode, primary is the first speaker when the data traffic reset state is left; for half-duplex contention mode, primary wins contention Bit off = For half-duplex flip-flop mode, secondary is the first speaker when the data traffic reset is left; for half-duplex contention mode, secondary wins contention		
Secondary LU Send Pacing Count	BINAPACE			Secondary logical unit send pacing count (see Figure J-5 for availability)	7	7
Secondary LU Receive Pacing Count	BINRPACE			Secondary logical unit receive pacing count (see Figure J-5 for availability)	8	8
Request Unit Sizes	BINSRUSZ			Maximum size of the request unit that can be sent by the secondary logical unit	9	9
	BINPRUSZ			Maximum size of the request unit that can be sent by the primary logical unit	10	A
		BINRUSEM	X'F0'	Mantissa (M) mask		
		BINRUSEG	X'0F'	Exponent (E) mask		
Primary LU Send Pacing Count	BINSPACE			Primary logical unit send pacing count (see Figure J-5 for availability)	11	B
Primary LU Receive Pacing Count	BINBPACE			Primary logical receive pacing count (see Figure J-5 for availability)	12	C
Logical Unit Profile	BINLUP		X'80'	(Reserved)	13	D
		BINLUP0C	X'00'	Logical unit profile 0		
		BINLUP1C	X'01'	Logical unit profile 1		
		BINLUP2C	X'02'	Logical unit profile 2		
		BINLUP3C	X'03'	Logical unit profile 3		
Logical Unit Presentation Services	BINPSCHR			Logical unit presentation services (See Figures J-6, J-7, and J-8)	14	E
Crypto-graphic control	BINCRCTL	BINCEUMP	X'C0'	Cryptographic flag mask	25	19
		BINCSESS	X'30'	Cryptographic session level mask		
		BINCLEN	X'0F'	Cryptographic field length mask		
Primary LU Name Length	BINPRIML			(Reserved)	26	1A
Primary LU Name	BINPRIM			(Reserved)	27	1B
User Data Length	BINUSEL			Length of user data	35	23
User Data	BINUSE			User data	36	24

Figure J-6 (Part 2 of 2). The BNDAREA DSECT (ISTDBIND)

BNDAREA DSECT: BINPSCHR for Logical Unit Profile 1

Field	DSECT DS or ORG label	DSECT EQU label	Value	Meaning	OS/VS or DOS/VS Displacement	
					Dec	Hex
FM Header Subset and Data Stream Profile	BINLUP1	BINFMS1C	X'10'	Function management header subset 1	14	E
		BINFMS2C	X'20'	Function management header subset 2		
		BINFMS3C	X'30'	Function management header subset 3		
	BINDSP1	BINDSP0C	X'00'	Data stream profile 0		
		BINDSP1C	X'01'	Data stream profile 1		
Primary Logical Unit FM Header Subset Flags	BINPFMB1	BINDESTS	X'80'	Bit on = transmission may be interrupted twice to send to another logical unit Bit off = transmission may be interrupted once to send to another logical unit	15	F
		BINCMPCT	X'40'	Bit on = compacted data may be sent Bit off = compacted data may not be sent		
		BINPDIR	X'20'	Bit on = PDIR may be sent Bit off = PDIR may not be sent		
			X'1F'	Reserved		
		BINKDDSI	X'10'	Bit on = keyed direct data sets with Add or Erase Record headers using RECID headers may be sent Bit off = keyed direct data sets with Add or Erase Record headers using RECID headers may not be sent		
		BINSDSI	X'08'	Bit on = sequential data sets with Add may be sent Bit off = sequential data sets with Add may not be sent		
		BIMSAI	X'04'	Bit on = sequentially accessed addressed direct data sets with Add, Note, and Note Reply in the opposite direction may be sent Bit off = sequentially accessed addressed direct data sets with Add, Note, and Note Reply in the opposite direction may not be sent		
		BINSIDS	X'02'	Bit on = series IDs (with status in reply) are supported Bit off = series IDs are not supported		
		BINARRR	X'01'	Bit on = Add Replicate, Replace Replicate is supported Bit off = Add Replicate, Replace Replicate is not supported		
	BINPFMB2		X'80'	Reserved	16	10
		BINQDSI	X'40'	Bit on = query data sets are supported Bit off = query data sets are not supported		
		BINCSDS	X'20'	Bit on = CREATE, SCRATCH, and SCRATCH ALL data sets are permitted Bit off = these data sets are not permitted		
		BINXFPD	X'10'	Bit on = execute FP delayed is permitted Bit off = execute FP delayed is not permitted		
			X'0F'	Reserved		
Primary Logical Unit Data Stream Flags	BINPDSB1	BININTR	X'80'	Bit on = interactive data stream (BS, CR, LF, ENP, INP, HT, VT) may be sent Bit off = interactive data stream may not be sent	17	11

Figure J-7 (Part 1 of 4). The BINPSCHR Field of the BNDAREA DSECT for Logical Unit Profile 1

Field	DSECT DS or ORG label	DSECT EQU label	Value	Meaning	OS/VS or DOS/VS Displacement	
					Dec.	Hex
		BINHFDS	X'40'	Bit on = horizontal data stream (SHF) may be sent Bit off = horizontal data stream may not be sent		
		BINVTDS	X'20'	Bit on = vertical tab data stream (SVF) may be sent Bit off = vertical tab data stream may not be sent		
		BINVSDS	X'10'	Bit on = vertical select data stream [SVF (channel), SEL] may be sent Bit off = vertical select data stream may not be sent		
		BINSLD	X'08'	Bit on = SLD may be sent Bit off = SLD may not be sent		
			X'06'	Reserved		
		BINTRNDS	X'01'	Bit on = transparency may be used Bit off = transparency may not be used		
		BINTRNDS	X'01'	Bit on = transparency data stream may be sent Bit off = transparency data stream may not be sent		
Primary Logical Unit Media Flags	BINMED1	BINDOCMT	X'80'	Bit on = document format may be sent Bit off = document format may not be sent	19	13
		BINCARD	X'40'	Bit on = card format may be sent Bit off = card format may not be sent		
		BINXCHNG	X'20'	Bit on = exchange media may be sent Bit off = exchange media may not be sent		
		BINDISK	X'10'	Bit on = disk data management may be sent Bit off = disk data management may not be sent		
		BINXCDF	X'08'	Bit on = extended card format may be sent Bit off = extended card format may not be sent		
		BINXDOCF	X'04'	Bit on = extended document format may be sent Bit off = extended document format may not be sent		
		BINCDEDS	X'02'	Bit on = secondary logical unit must send Change Direction every EDS Bit off = secondary logical unit may send Change Direction every EDS		
Secondary Logical Unit FM Header Subset Flags	BINSFMB1	BINDESTS	X'80'	Bit on = transmission may be interrupted twice to send to another logical unit Bit off = transmission may be interrupted once	20	14
		BINCMPCT	X'40'	Bit on = compacted data may be sent Bit off = compacted data may not be sent		
		BINPDIR	X'20'	Bit on = PDIR may be sent Bit off = PDIR may not be sent		
		BINKDDSI	X'10'	Bit on = keyed direct data sets with Add or Erase Record headers using RECID headers may be sent Bit off = these keyed direct data sets may not be sent		

Figure J-7 (Part 2 of 4). The BINPSCHR Field of the BNDAREA DSECT for Logical Unit Profile 1

Field	DSECT DS or ORG label	DSECT EQU label	Value	Meaning	OS/VS or DOS/VS Displacement	
					Dec	Hex
		BINSAI	X'04'	Bit on = sequential access to addressed direct data set may be sent Bit off = these data sets may not be sent		
		BINSIDS	X'02'	Bit on = series IDs (with status in reply are supported Bit off = series IDs are not supported		
		BINARRR	X'01'	Bit on = Add Replicate, Replace Replicate are supported Bit off = these are not supported		
	BINSFMB2		X'80'	Reserved	21	15
		BINQDSI	X'40'	Bit on = query data sets are supported Bit off = query data sets are not supported		
		BINCSDS	X'20'	Bit on = CREATE, SCRATCH, and SCRATCH ALL data sets are permitted Bit off = these data sets are not permitted		
		BINXFPD	X'10'	Bit on = execute FP delayed is permitted Bit off = execute FP delayed is not permitted		
			X'0F'	Reserved		
Secondary Logical Unit Data Stream Flags	BINSDSB1	BININTR	X'80'	Bit on = interactive data stream (BS, CR, LF, ENP, INR, HT, VT) may be sent Bit off = interactive data stream may not be sent	22	16
		BINHFDS	X'40"	Bit on = horizontal data stream (SHF) may be sent Bit off = horizontal data stream may not be sent		
		BINVTDS	X'20'	Bit on = vertical tab data stream (SVF) may be sent Bit off = vertical tab data stream may not be sent		
		BINVSDS	X'10'	Bit on = vertical select data stream [SVF (channel), SEL] may be sent Bit off = vertical select data stream may not be sent		
		BINSLD	X'08'	Bit on = SLD may be sent Bit off = SLD may not be sent		
			X'06'	Reserved		
		BINTRNDS	X'01'	Bit on = transparency may be used Bit off = transparency may not be used		
		BINTRNDS	X'01'	Bit on = transparency data stream may be used Bit off = transparency data stream may not be sent		

Figure J-7 (Part 3 of 4). The BINPSCHR Field of the BNDAREA DSECT for Logical Unit Profile 1

Field	DSECT DS or ORG label	DSECT EQU label	Value	Meaning	OS/VS or DOS/VS Displacement	
					Dec	Hex
Secondary Logical Unit Media Flags	BINSMED1	BINDOCMT	X'80'	Bit on = document format may be sent Bit off = document format may not be sent	24	18
		BINCARD	X'40'	Bit on = card format may be sent Bit off = card format may not be sent		
		BINXCHNG	X'20'	Bit on = exchange media may be sent Bit off = exchange media may not be sent		
		BINDISK	X'10'	Bit on = disk data management may be sent Bit off = disk data management may not be sent		
		BINXCDF	X'08'	Bit on = extended card format may be sent Bit off = extended card format may not be sent		
		BINXDOCF	X'04'	Bit on = extended document format may be sent Bit off = extended document format may not be sent		
		BINCDEDS	X'02'	Bit on = secondary logical unit must send Change Direction every EDS Bit off = secondary logical unit may send Change Direction every EDS		
			X'01'	Reserved		

Figure J-7 (Part 4 of 4). The BINPSCHR Field of the BNDAREA DSECT for Logical Unit Profile 1

Field	DSECT DS or ORG label	DSECT EQU label	Value	Meaning	OS/VS or DOS/VS Displacement	
					Dec	Hex
				Reserved	14	E
				Reserved	15	F
				Reserved	16	10
				Reserved	17	11
				Reserved	18	12
BINSCRSZ	BINSPRIR			Defaulted primary number of rows	19	13
	BINSPRIC			Defaulted primary number of columns	20	14
	BINSALTR			Alternate number of rows	21	15
	BINSALTC			Alternate number of columns	22	16
Presentation Space Size	BINPRESZ			Presentation space size	23	17
		BINPSZ0	X'00'	Undefined matrix		
		BINPSZ1	X'01'	12 x 40 character matrix		
		BINPSZ2	X'02'	24 x 80 character matrix		
		BINPSFX	X'7E'	Presentation space is a fixed size as defined by the default values		
		BINPSZRC	X'7F'	Presentation space has both default and alternate sizes as defined in the DEFAULT and ALTERNATE fields		

Figure J-8. The BINPSCHR Field of the BNDAREA DSECT for Logical Unit Profile 2

Field	DSECT DS or ORG label	DSECT EQU label	Value	Meaning	OS/VS or DOS/VS Displacement	
					Dec	Hex
				Reserved	14	E
				Reserved	15	F
				Reserved	16	10
				Reserved	17	11
				Reserved	18	12
	BINBFRSZ			Presentation space size (next four bytes)		
	BINBFRDR			Default number of rows	19	13
	BINBFRDC			Default number of columns	20	14
	BINBFRAR			Alternate number of rows	21	15
	BINBDRAC			Alternate number of columns	22	16
	BINBDESC			Code for presentation size: 0 = maximum 1 = 480 characters 2 = 1920 characters X'7E' = fixed size as defined by the default values X'7F' = variable size as defined by the default and alternate values	23	17

Figure J-9. The BINPSCHR Field of the BNDAREA DSECT for Logical Unit Profile 3

IBM-Supplied Session Parameters for Logical Units

IBM supplies session parameters for the various types of logical units that IBM supports. These parameters are provided in an IBM-supplied logon mode table (ISTINCLM for DOS/VS and OS/VS2 MVS or ISTINALM for OS/VS1 or OS/VS2 SVS). Figure J-10 shows the MODEENT macro instructions used in defining this table with the appropriate session parameters.

The session parameters in ISTINCLM or ISTINALM are used for a logical unit if you do not specify a logon mode table for that logical unit during ACF/VTAM definition. See the appropriate system programmer's guide for additional information. The way in which an application program can be written depends upon the protocols that these session parameters represent. The logical units for which there is an entry in the logon mode table are:

IBM 3270 Information Display System

IBM 3600 Finance System

IBM 3650 Retail Store System

IBM 3660 Supermarket System

IBM 3767 Communications Terminal

IBM 3770 Data Communications System

Some of the logical units listed in the table may accept logon mode names used by other logical units listed or may accept logon mode names not included in the IBM-supplied table. Logical units not listed may accept a logon mode name that is listed. Refer to the appropriate component description or programming guide for the logon modes acceptable to a particular logical unit.

```
ISTINCLM[1] MODETAB
IBM3767     MODEENT  LOGMODE=INTERACT,FMPROF=X'03',TSPROF=X'03',PRIPROT=X'B1',SECPROT=X'A0',COMPROT=X'3040'
IBM3770     MODEENT  LOGMODE=BATCH,FMPROF=X'03',TSPROF=X'03',PRIPROT=X'A3',SECPROT=X'A3',COMPROT=X'7080'
IBMS3270    MODEENT  LOGMODE=S3270,FMPROF=X'02' TSPROF=X'02',PRIPROT=X'71',SECPROT=X'40',COMPROT=X'2000'
IBM3600     MODEENT  LOGMODE=IBM3600,FMPROF=X'04',TSPROF=X'04',PRIPROT=X'F1',SECPROT=X'F1',COMPROT=X'7000'
IBM3650I[2] MODEENT  LOGMODE=INTRACT,FMPROF=X'00',TSPROF=X'04',PRIPROT=X'B1',SECPROT=X'90',COMPROT=X'6000'
IBM3650U[2] MODEENT  LOGMODE=INTRUSER,FMPROF=X'00',TSPROF=X'04',PRIPROT=X'31',SECPROT=X'30',COMPROT=X'6000'
IBMS3650[2] MODEENT  LOGMODE=IBMS3650,FMPROF=X'00',TSPROF=X'04',PRIPROT=XB0',SECPROT=X'90',COMPROT=X'4000'
IBM3650P[2] MODEENT  LOGMODE=PIPELINE,FMPROF=X'00',TSPROF=X'03',PRIPROT=X'30',SECPROT=X'10',COMPROT=X'0000'
IBM3660[2]  MODEENT  LOGMODE=SMAPPL,FMPROF=X'03',TSPROF=X'03',PRIPROT=X'A0',SECPROT=X'A0',COMPROT=X'0081'
IBM3660A[2] MODEENT  LOGMODE=SMSNA100,FMPROF=X'00',TSPROF=X'00',PRIPROT=X'00',SECPROT=X'00',COMPROT=X'0000'
            MODEEND
```

Notes: [1] The name of this table in OS/VS1 or OS/VS2 SVS is ISTINALM.

[2] These logon mode names are not available in OS/VS2 SVS.

Figure J-10. LOGMODE Entries in the IBM-Supplied Logon Mode Table (ISTINCLM)

Glossary

This glossary defines terms and abbreviations that are important in this book. It does not include terms previously established for IBM operating systems and IBM products used with ACF/VTAM. Additional terms can be found by referring to the index, to prerequisite and corequisite books, and to the *IBM Data Processing Glossary*, GC20-1699.

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A complete commentary taken from ANSI is identified by an asterisk that appears between the term and the beginning of the commentary; a definition taken from ANSI is identified by an asterisk after the item number for that definition.

The symbol *ISO* at the beginning of a definition indicates that it has been discussed and agreed upon at meetings of the International Organization for Standardization Technical Committee 97/Subcommittee 1 (Data Processing), and has also been approved by ANSI.

The symbol *SC1* at the beginning of a definition indicates that it is reprinted from an early working document of ISO Technical Committee 97/Subcommittee 1 and that final agreement has not yet been reached among its participating members.

A

ACB. Access method control block.

ACB name. (1) The name of an ACB macro instruction. (2) A name that can be specified in the ACBNAME parameter of an APPL statement. This name allows an ACF/VTAM application program that is used in more than one domain to specify the same application program identification (pointed to by the APPLID parameter of the program's ACB statement) in each copy. ACF/VTAM knows the program by both its ACB name and its network name (the name of the APPL statement). Program users within the domain can request logon using the ACB name or the network name; program users in other domains must use the network name (which must be unique in the network). Contrast with *network name.*

accept. In ACF/VTAM, to connect a terminal to a primary application program as the result of a logon. The logon may be originated by the terminal, the network operator, another primary application program, or ACF/VTAM. Contrast with *acquire (1).*

access method control block (ACB). A control block that links an application program to VSAM or ACF/VTAM.

ACF. Advanced Communications Function.

ACF/VTAM. Advanced Communications Function for the Virtual Telecommunications Access Method.

ACF/VTAM application program. A program that has opened an ACB to identify itself to ACF/VTAM. It can now issue ACF/VTAM macro instructions.

ACF/VTAM definition. The process of defining the communication network to ACF/VTAM (which is called "network definition") and modifying IBM-defined characteristics to suit the needs of the user.

ACF/VTAM definition library. The DOS/VS files or OS/VS data sets that contain the definition statements and start options filed during ACF/VTAM definition.

ACF/VTAM system. The resources defined to and controlled by ACF/VTAM.

acquire. (1) In relation to an ACF/VTAM application program, to connect a terminal to the application program in the absence of a logon. The connection occurs at the primary application program's initiative. Contrast with *accept.* (2) In relation to ACF/VTAM resource control, to take over resources (communications controllers or physical units) that were formerly controlled by a data communication access method in another domain, or to assume control of resources that were controlled by this domain but released. Contrast with *release*. See also *resource takeover.*

active. Pertaining to a major node that has been made known to ACF/VTAM by operator command and is available for use or pertaining to a minor node that is connected to, or available for connection to, an ACF/VTAM application program. Contrast with *inactive.*

adjacent domain. A domain that is physically connected to another domain by a single cross-domain link or by a shared local communications controller.

adjacent node. A node that is physically connected to another node by a single data link.

Advanced Communications Function (ACF). A group of program products for users of DOS/VS and OS/VS that can provide improved single-domain and, optionally, multidomain data communication capability.

Advanced Communications Function for the Virtual Telecommunications Access Method (ACF/VTAM). A program product that provides improved single-domain data communication capability and, optionally, multidomain capability.

any-mode. In ACF/VTAM: (1) The form of a read or receive request that obtains data from one unspecified terminal. (2) The form of solicit request that solicits uata from all eligible connected terminals. (3) The form of connection request that connects one unspecified terminal that has logged on. (4) Contrast with *specific-mode.* See also *continue-any mode.*

application program identification. The symbolic name by which an application program is identified to ACF/VTAM. It is specified in the APPLID parameter of the ACTS macro instruction. It corresponds to the ACBNAME parameter in the APPL statement or, if the ACBNAME is defaulted, to the name of the APPL statement.

APPLID routine. Synonym for *logon-interpret routine.*

asynchronous operation. In ACF/VTAM, an operation such as connection or data transfer in which the application program is allowed to continue execution while ACF/VTAM performs the operation. ACF/VTAM interrupts the program as soon as the operation is completed.

asynchronous request. In ACF/VTAM, a request for an asynchronous operation.

authorization exit routine. In ACF/VTAM, an optional, user-written routine that approves or disapproves requests for connection and disconnection.

authorized path. In ACF/VTAM for OS/VS2 MVS, a facility that enables an authorized application program to specify that a data transfer or related operation be carried out in a faster manner than usual.

automatic logon. A process by which ACF/VTAM creates a logon for a terminal or logical unit to a designated application program whenever the terminal or logical unit is not connected to another program. Specifications for the automatic logon can be made when the terminal or logical unit is defined or can be made by the network operator in the VARY LOGON command. See also *controlling application program.*

available. In ACF/VTAM: (1) Pertaining to a terminal that supports only one session, is active, is not connected to an application program, and for which there is no pending logon. (2) Pertaining to an exit routine that has been specified by an application program and that is not being executed.

B

basic information unit (BIU). In SNA, the unit of data and control information that is passed between connection point managers. It consists of a request/response header (RH) followed by a request/response unit (RU).

basic mode. In ACF/VTAM, a mode of data transfer in which the application program can communicate with non-SNA terminals. Contrast with *record mode.*

basic transmission unit (BTU). (1) In the network control program, the unit of exchange between the host processor and the communications controller. It consists of control information and may also include data. The control information consists of a basic transmission header (BTH) and a basic device unit (BDU). All data transferred between the host and the communications controller is preceded by a BTU. (2) In SNA, the unit of data and control information passed between path control components. The BTU can consist of one or more path information units (PIUs), depending on whether blocking is done by the path control that builds the BTU.

block. In the basic mode of ACF/VTAM, a unit of data that is transmitted between an ACF/VTAM application program and a terminal.

bracket. In ACF/VTAM, an uninterruptible unit of work, consisting of one or more chains of request units and their responses, exchanged between an application program and a terminal. Examples are data base inquiries/replies, update transactions, remote job entry output sequences to work stations, and similar applications.

bracket protocol. In SNA, a data flow control protocol in which exchanges between logical units (LUs) are achieved through the use of brackets, with one logical unit designated at session initiation as the first speaker, and the other logical unit as the bidder. The bracket protocol involves bracket initiation and termination rules.

C

cancel closedown. A closedown in which ACF/VTAM is abnormally terminated as the result of an operator command.

CDRM. Cross-domain resource manager.

CDRSC. Cross-domain resource.

change-direction protocol. In ACF/VTAM, a method of communication in which the sender stops sending on its own initiative, having signaled this fact to the receiver on the last request sent, and prepares to receive.

character-coded. In ACF/VTAM, pertaining to a logon or logoff command usually entered by a terminal operator from a keyboard and sent by a logical unit in character (unformatted) form. Contrast with *field-formatted.*

checkpoint. A point in time at which the status of a data communication system is recorded. The system can then be reconstructed to its status at or near the time of failure.

CID. Communication identifier.

ciphertext. In ACF/VTAM, synonym for *enciphered data.*

clear data. Data that is not enciphered. Synonymous with *plaintext.*

clear session. A session in which only clear data is transmitted or received. Contrast with *cryptographic session.*

closedown. The deactivation of a device, program, or system. See also *cancel closedown, orderly closedown,* and *quick closedown.*

cluster control unit. A device that can control the input/output operations of more than one device. A remote cluster control unit is attached to a host computer only through a communications controller. A local cluster control unit is attached through a channel. A cluster control unit may be controlled by a program stored and executed in the unit; for example, the IBM 3601 Finance Communication Controller. Or it may be controlled entirely by hardware; for example, the IBM 2972 Station Control Unit. See also *communications controller* and *SDLC cluster controller.*

cluster controller. See *cluster control unit* and *SDLC cluster controller.*

command. (1) A request from a terminal for the performance of an operation or the execution of a particular program. (2) In SNA, a request unit initiating an action or beginning a protocol; it is used in contrast with reply, which is a request unit (not a response) that is sent in reaction to a command. For example: Quiesce (a data flow control request), is a command, while Quiesce Complete is the reply. (3) In SNA, a data flow control or session control request that may be sent or received by an application program using record mode.

common network. In SNA, the network consisting of path control and data link control elements that routes and moves path information units between any two transmission control elements.

communication control character. A control character intended to control or facilitate transmission of data over communication networks.

communication control unit. A communication device that controls the transmission of data over lines in a telecommunication network. Communication control units include transmission control units and communications controllers.

communication identifier (CID). In ACF/VTAM, a key for locating the control blocks that represent an active session. The key is created during the session establishment procedure and deleted when the session ends.

communication line. Any physical link, such as a wire or a telephone circuit, that connects one or more remote terminals to a communication control unit, or connects one communication control unit with another.

communications controller. A type of communication control unit whose operations are controlled by a program stored and executed in the unit. Examples are the IBM 3704 and 3705 Communications Controllers.

configuration restart. In ACF/VTAM, the facility for immediate recovery after a failure in the NCP or communications controller or after a loss of contact with a physical unit or logical unit, or for delayed recovery after a failure or deactivation of a major node, ACF/VTAM, or the host computer. Recovery may include reloading the NCP or restoring the network by means of a checkpoint. Restarting by means of a checkpoint requires the user to specify one or more VSAM data sets in which ACF/VTAM keeps a record of changes to initial configuration data.

connection. (1) In ACF/VTAM, the linking of control blocks in such a way that an application program is in session with a terminal. Connection includes establishing and preparing the network path between the program and the terminal. (2) A physical capability of communicating between two end points. Also called physical connection. See also *queued for connection.*

connection point manager (CP manager). In SNA, one of the three components of transmission control; it provides a common mechanism by which session control, network control, and network addressable units communicate with their corresponding elements through the common network. The unit of information handled by the connection point manager is a request/response unit (RU). The unit of control information built by the sending connection point manager and interpreted by the receiving connection point manager is a request/response header (RH). See also *session control, network control.*

continue-any mode. In ACF/VTAM, a state into which a terminal is placed that allows its input to satisfy an input request issued in any-mode. While this state exists, input from the terminal can also satisfy input requests issued in specific-mode. Contrast with *continue-specific mode.*

continue-specific mode. In ACF/VTAM, a state into which a terminal is placed that allows its input to satisfy only input requests issued in specific-mode.

controlling application program. An application program to which a terminal (other than a secondary application program) is automatically logged on whenever the terminal is active and available. See also *automatic logon.*

conversational write operation. In the basic mode of ACF/VTAM, an operation wherein data is first sent to a terminal and data is then read from that terminal.

converted command. An intermediate form of a character-coded logon or logoff command produced by ACF/VTAM through use of an unformatted system services definition table. The format of a converted logon or logoff command is fixed; the unformatted system services definition table must be constructed so that the character-coded command (as entered by a logical unit) is converted into the predefined, converted command format. See also *character-coded.*

cross-domain. Pertaining to control or resources involving more than one domain.

cross-domain keys. A pair of cryptographic keys used at a host processor to encipher the cryptographic session key that is sent to another host processor and to decipher the cryptographic session key that is sent from another host processor during cross-domain cryptographic session establishment.

cross-domain link. A data communication line physically connecting two domains. See also *local-to-local link.*

cross-domain resource (CDRSC). A resource owned by another domain but known in this domain by name and associated cross-domain resource manager.

cross-domain resource manager (CDRM). The portion of the system services control point (SSCP) that controls cross-domain sessions.

cross-domain session. A session between network addressable units in different domains.

CRV. Cryptographic verification.

cryptographic. Pertaining to the transformation of data to conceal its meaning.

cryptograhic algorithm. A set of rules that specify the mathematical steps required to encipher and decipher data.

cryptographic key. A 64-bit value (containing 56 independent bits and 8 parity bits) that functions with the DES algorithm in determining the output of the DES algorithm. See also *cross-domain keys, cryptographic session key, host master key,* and *secondary logical unit key.*

cryptographic session. A session in which data may be enciphered before it is transmitted and deciphered after it is received. See also *required cryptographic session* and *selective cryptographic session.* Contrast with *clear session.*

cryptographic session key. In ACF/VTAM, a data encrypting key used to encipher and decipher data transmitted in a cryptographic session.

cryptographic verification (CRV) request. A request unit used to return an initial chaining value to the secondary logical unit to verify that the secondary logical unit is using the same cryptographic session key.

D

data communication. The transmission, reception, and validation of data.

Data Encryption Standard (DES) algorithm. A cryptographic algorithm designed to encipher and decipher 8-byte blocks of data using a 64-bit cryptographic key, as specified in the *Federal Information Processing Standard Publication 46,* January 15, 1977.

data flow. In SNA, any of four flows in a given session, characterized as either primary-to-secondary or secondary-to-primary, each of which may be normal or expedited.

data flow control. In SNA, a set of protocols and control functions used by the network addressable unit to assist in controlling the flow of requests and responses within a session. Contrast with *session control.*

data flow control protocol. In SNA, the sequencing rules for requests and responses by which network addressable units in a communication network coordinate and control data transfer and other operations. For example, see *bracket protocol.*

data link. (1) (SC1) An assembly of those parts of two data terminal equipments that define the protocol together with their interconnecting data circuit. This assembly enables a data source to transfer data to a data sink. (2) The communication channel, modem, and communication controls of all stations connected to the communication channel, used in the transmission of information between two or more stations. (3) The physical connection and the connection protocols between the host and communication controller nodes via the host data channel. (4) Contrast with *communication line.*

Note: *A communication line is the physical medium; for example, a telephone wire, a microwave beam. A data link includes the physical medium of transmission, the protocol, and associated communication devices and programs–it is both logical and physical.*

data link control (DLC). (1) The noninformation exchanges that set up, control, check, and terminate the information exchange(s) between two stations on a data link. (2) In SNA, one of the constituent parts of the transmission subsystem, and one of two constituent parts of the common network. It initiates, controls, checks, and terminates the data transfer over a data link between two nodes. Two distinct DLCs are defined in SNA: the DLC for the System/370 data channel, and SDLC for serial-by-bit data links. See also *path control* and *transmission control.*

data link control protocol. A set of rules used by two nodes on a data link to accomplish an orderly exchange of information. Synonymous with *line discipline.*

data transfer. In data communication, the sending of data from one point in a communication network and the receiving of the data at another point in the network.

data transmission. The sending of data from one point in a communication network for reception elsewhere.

decipher. To convert *enciphered data* into *clear data.* Synonymous with *decrypt.* Contrast with *encipher.*

decrypt. Synonym for *decipher.*

definite response. In SNA, a form of response requested in the request header for a request unit; the receiver is requested to return a response whether positive or negative. Contrast with *exception response* and *no response.*

definition statement. In ACF/VTAM, the means of describing an element of the communication network.

DES. Data Encryption Standard.

device control character. (ISO) A control character used for the control of ancillary devices associated with a data processing system or data communication system, for example, for switching such devices on or off.

device-type logical unit. A logical unit residing in a physical unit other than a host computer.

disconnection. (1) In ACF/VTAM, the dissociation of control blocks in such a way as to end a session between an application program and a connected terminal. The disconnection process includes suspending the use of the network path between the program and the terminal. (2) A physical dissociation between two end points.

DLC. Data link control.

domain. In a data communication system, the portion of the total network that is controlled by the SSCP in one telecommunication access method.

E

emulation mode. A function of the network control program that enables a 3704 or 3705 Communications Controller to perform activities equivalent to those performed by an IBM 2701 Data Adapter Unit or an IBM 2702 or 2703 Transmission Control Unit. See also *network control mode.*

encipher. (1) To scramble data or convert it, prior to transmission, to a secret code that masks the meaning of the data to any unauthorized recipient. (2) In ACF/VTAM, to convert clear data into enciphered data. Synonomous with *encrypt.* Contrast with *decipher.*

enciphered data. Data that is intended to be illegible to all except those who legitimately possess the means to reproduce the clear data. Synonymous with *ciphertext.*

encrypt. Synonym for *encipher.*

end user. The ultimate source or destination of information flowing through a system. An end user may be an application program, an operator (such as a terminal user or a network operator/administrator), or a data medium (such as cards or tapes).

error lock. In the basic mode of ACF/VTAM, a condition in which communication with a non-SNA terminal is suspended until a reset operation occurs.

exception message. See *exception request.*

exception request. In communicating with a logical unit, a message that indicates an unusual condition such as a sequence number being skipped. When ACF/VTAM detects such a condition, it notifies the application program. ACF/VTAM or the application program provides sense information which is included in the response that is sent to the logical unit.

exception response. (1) In SNA, a response requested in the RH for a request unit; the receiver is requested to return a response only if it is negative. Contrast with *definite response.* (2) Synonym for *negative response.*

exit list (EXLST). In VSAM or ACF/VTAM, a control block that contains the addresses of user-written routines that receive control when specified events occur during execution; for example, routines that process logons or I/O errors.

exit routine. In ACF/VTAM, any of several types of special-purpose user-written routines. See *accounting exit routine, authorization exit routine, EXLST exit routine, logon-interpret routine,* and *RPL exit routine.*

EXLST exit routine. In ACF/VTAM, a type of user-written routine whose address has been placed in an exit list (EXLST) control block. See also *RPL exit routine.*

expedited flow. In SNA, a data flow that is independent of and controls the normal flow. Data flow is split into normal and expedited flows. Requests and responses on a given flow (normal or expedited) are usually processed sequentially within the path, but the expedited flow traffic may be moved ahead of the normal flow traffic within the path. Contrast with *normal flow.*

external domain. A domain controlled by a different system services control point (SSCP).

F

FID. Format identification. FID0, FID1, FID2, FID3. See *format identification.*

field-formatted. In ACF/VTAM, pertaining to a logon or logoff command that is encoded into fields, each having a specified format such as binary codes, bit-significant flags, and symbolic names. Contrast with *character-coded.*

function management (FM). (1) In SNA, the layer of functional capability between the application layer and the transmission subsystem. It includes data flow control and function management data (FMD) services. See also *application layer, transmission subsystem.* (2) In ACF/VTAM, the insertion of control information within messages so that the messages sent to a particular type of terminal are in the required format and so that messages received from that type of terminal are handled properly.

function management data (FMD) services. In SNA, the component of function management responsible for request/response units marked as "FM data." This includes presentation services and logical unit services (within the logical unit), physical unit services (within the physical unit), and network services (within the system services control point). Contrast with *data flow control.*

H

host computer. (1) The primary or controlling computer in a multiple computer operation. (2) A computer used to prepare programs for use on another computer or on another data processing system; for example, a computer used to compile, link-edit, or test programs to be used on another system. (3) In a data processing system that includes ACF/VTAM or ACF/TCAM, the computer in which ACF/VTAM or ACF/TCAM resides.

host master key. A primary key encrypting key used to encipher operational keys that are used at the host processor. In ACF/VTAM, a key encrypting key used to encipher and decipher cryptographic session keys.

host system. (1) A data processing system that is used to prepare programs and the operating environments for use on another computer or controller. (2) The data-processing system to which a communication system is connected and with which the system can communicate.

I

ICV. Initial chaining value.

inactive. In ACF/VTAM, pertaining to a major node that has not been made known to ACF/VTAM and is unavailable for use, or pertaining to a minor node that is not connected to nor available for connection to an application program. Contrast with *active.*

initial chaining value (ICV). An 8-byte random number used to verify that both ends of a cryptographic session have the same cryptographic session key. It is generated by the secondary end of the session upon receipt of a Bind request for a cryptographic session and is returned to the primary end of the session in the Bind response, enciphered under the cryptographic session key received in the Bind request. The initial chaining value is also used as input to the CIPHER macro to encipher or decipher data in a cryptographic session.

intermediate node. In SNA, a physical unit that is capable of routing path information units to another subarea.

interpret table. In ACF/VTAM, a user-defined correlation list that translates an argument into a string of eight characters. Interpret tables can be used to translate logon data into the name of an application program for which the logon is intended.

L

LDO. Logical device order.

leading graphics. From one to seven graphic characters that may accompany an acknowledgment sent to or from a BSC terminal in response to the receipt of a block of data.

line. See *communication line.*

line control. The scheme of operating procedures and control signals by which a communication network is controlled.

line discipline. Synonym for *data link control protocol.*

line group. A collection of one or more communication lines of the same type.

local. (1) Pertaining to the attachment of devices directly by I/O channels to a host computer. Contrast with *remote.* (2) In data communication, pertaining to devices that are attached to a controlling unit by cables, rather than by data links.

local address. In SNA, an address transformed to or from a network address by the boundary function (for example, in a communications controller node) for use by a cluster controller node or terminal node. See also *network address, boundary function.*

local NCP. An NCP that is channel-attached to a host computer. Contrast with *remote NCP.*

local-to-local link. A data communication link between two local communications controllers. The link can be either a cross-domain link (communications controllers in different domains) or it can exist within a domain between local communications controllers controlled by the same system services control point.

logical device order (LDO). In ACF/VTAM, a set of parameters that specify a data-transfer or data-control operation to local non-SNA 3270 Information Display Systems and certain kinds of start/stop or BSC terminals.

logical error. In ACF/VTAM, an error condition that results from an invalid request; a program logic error.

logical unit. In SNA, one of three types of network addressable units (NAUs). It is the port through which an end user accesses function management in order to communicate with another end user. It is also the port through which the end user accesses the services provided by the system services control point (SSCP). It must be capable of supporting at least two sessions – one with the SSCP, and one with another logical unit. It may be capable of supporting many sessions with other logical units. ACF/VTAM application programs must communicate with logical units in record mode. See also *physical unit, system services control point.*

log off. In ACF/VTAM, to request that a terminal be disconnected from an application program.

logoff. In ACF/VTAM, a request that a terminal be disconnected from an application program.

log on. In ACF/VTAM, to request that a terminal be connected to an application program.

logon. In ACF/VTAM, a request that a terminal be connected to an application program. See also *automatic logon* and *simulated logon.*

logon data. In ACF/VTAM: (1) The data portion of a field-formatted or character-coded logon from an SNA terminal or from a non-SNA 3270 terminal for which PU=YES has been specified. (2) The entire logon sequence or message from a non-SNA terminal.

logon-interpret routine. In ACF/VTAM, a user-written exit routine associated with a logon-interpret table entry that translates logon data. It may also verify the logon. Synonymous with *APPLID routine.*

logon message. Synonym for *logon data.*

logon mode. In ACF/VTAM, the communication protocols that govern a session between a logical unit and an ACF/VTAM application program or between two application programs. Synonymous with *session parameters.*

logon mode name. In ACF/VTAM, the symbolic representation of a logon mode.

logon mode table. In ACF/VTAM, a set of macro-generated constants making up one or more logon modes. Each logon mode is associated with a logon mode name.

LU-LU session. In SNA, a session between two logical units in the network. It allows communication between two end users, each associated with one of the logical units.

M

mandatory cryptographic session. See *required cryptographic session.*

message. (1) *An arbitrary amount of information whose beginning and end are defined or implied. (2) For BSC devices, the data unit from the beginning of a transmission to the first ETX character, or between two ETX characters. For start/stop devices "message" and "transmission" have the same meaning. (3) (SC1) A sequence of characters used to convey data. The sequence usually consists of three parts: the heading, the text, and one or more characters used for control or error-detection purposes. (4) A combination of characters and symbols transmitted from one point to another. (5) In SNA, a request/response header and its associated request/response unit. In some ACF/VTAM publications, a distinction is made between messages, responses, and commands, where "message" is used to mean a data request.

MTA. Multiple terminal access.

multiple-channel-attached communications controller. A communications controller that can be channel-attached to more than one host computer.

multiple terminal access (MTA). A feature of the network control program that permits it to communicate with a variety of dissimilar, commonly used start-stop terminals over the same switched network connection.

Multisystem Networking Facility. In ACF/VTAM, a feature that supports communication among multiple host computers operating with DOS/VS, OS/VS1, and OS/VS2 (SVS and MVS).

multithread application program. An ACF/VTAM application program that processes many requests from many terminals concurrently. Contrast with *single-thread application program.*

N

NAU. Network addressable unit.

NCP. Network control program.

negative response. A response indicating that a request did not arrive successfully or was not processed successfully by the receiver in a session. Synonymous with *exception response.* Contrast with *positive response.*

negative response to polling limit. For a start-stop or BSC terminal, the maximum number of consecutive negative responses to polling that the communications controller accepts before suspending polling operations.

network. (1) (SC1) The assembly of equipment through which physical connections are made between terminal installations. (2) In data communication, a configuration in which two or more locations are physically connected for the purpose of exchanging data.

network address. In SNA, the address, consisting of subarea and element subfields, that uniquely identifies a link or the location of a network addressable unit. The conversion from a local address to a network address, or vice versa, is accomplished as part of the boundary function in the node attached to a cluster controller node or a terminal node. See *local address.* See also *network name.*

network addressable unit (NAU). In SNA, a logical unit, a physical unit, or a system services control point. It is the origin or the destination of information transmitted in the transmission subsystem. Each NAU has a network address that represents it to the transmission subsystem. The transmission subsystem and the NAUs collectively constitute the communication system. See also *network name, network address.*

network control (NC). In SNA, a transmission control component that permits logically adjacent connection point managers to communicate through the common network, using sessions established for other purposes and thereby avoiding special session establishment. See also *connection point manager, session control.*

network control mode. The functions of a network control program that enable it to direct a communications controller to perform activities such as polling, device addressing, dialing, and answering. See also *emulation mode.*

network control program (NCP). A program, generated by the user from a library of IBM-supplied modules, that controls the operation of a communications controller.

network control program generation. The process, performed in a host system, of assembling and link-editing a macro instruction program to produce a network control program.

network name. In SNA, the symbolic identifier by which a network addressable unit or a data link is referred to by end users. See also *network address.* In ACF/VTAM, for multidomain users, the name of the APPL statement is the network name and must be unique across domains. Contrast with *ACB name.*

network operator. (1) A person responsible for controlling the operation of a communication network. (2) An ACF/VTAM application program authorized to issue network operator commands.

network operator command. A command used to monitor or control the communication network.

network operator console. A system console or terminal in the network from which a network operator controls a communication network.

network operator logon. A logon requested on behalf of a terminal by means of a network operator command.

NIB. Node initialization block.

NIB list. A series of contiguous node initialization blocks.

no response. In SNA, an indication in the RH for a request unit that no response is to be returned to the request, whether or not it is received and processed successfully. Contrast with *definite response* and *exception response.*

node. (1) An addressable point in a data communication network. (2) In ACF/VTAM, a point in a communication network defined by a symbolic name.

node initialization block (NIB). In ACF/VTAM, a control block associated with a particular terminal that contains information used by the application program to identify the terminal and indicate how communication requests directed at the terminal are to be processed.

non-SNA terminal. A terminal supported by ACF/VTAM that uses start-stop or BSC protocol or that is part of a local non-SNA 3270 Information Display System. A remote BSC 3270 terminal defined with PU=YES is considered an SNA terminal.

normal flow. In SNA, a data flow that is used for most requests and responses. Data flow is split into normal and expedited flows. The expedited flow is independent of and used to control the normal flow. Requests and responses on a given flow (normal or expedited) are usually processed sequentially within the path, but the expedited flow traffic may be moved ahead of the normal flow traffic within the path. Contrast with *expedited flow.*

O

operational key. A data encrypting key used to encipher and decipher data. In ACF/VTAM, synonymous with *cryptographic session key.*

orderly closedown. The orderly deactivation of ACF/VTAM and the communication network. An orderly closedown does not take effect until all application programs have been disconnected from ACF/VTAM. Until then, all data transfer operations continue. Contrast with *cancel closedown* and *quick closedown.*

P

pacing. In data communication, a technique by which a receiving connection point manager or boundary controls the rate of transmission of a sending function connection point manager to prevent overrun.

path. (1) In ACF/VTAM, the intervening nodes and data links connecting a terminal and an application program in the host computer. (2) In defining a switched SNA major node, a potential dial-out port that can be used to reach a physical unit. (3) In defining ACF/VTAM or ACF/NCP routing tables, a route through an adjacent subarea to one or more destination subareas. (4) In SNA, the series of nodes, data links, and common network components (path control and data link control) that form the complete route traversed by the information exchanged between two network addressable units in session.

path control (PC). In SNA, one of the components of the transmission subsystem, and one of two components of the common network. It is responsible for managing the sharing of data link resources of the common network and for routing basic information units (BIUs) through it. It is aware of the location of NAUs in the network and of the paths between them. It maps the BIUs, handled by transmission control, into path information units

(PIUs), and then into basic transmission units (BTUs) that are passed between path control and data link control. The unit of control information built by the sending path control component and interpreted by the receiving path control component is a transmission header (TH). See also *data link control, transmission control.*

path information unit (PIU). In SNA, the unit of transmission consisting of a transmission header (TH) and either a basic information unit (BIU) or a BIU segment.

path table. A table, contained in a network node, whose entries contain path information. For example, the ACF/VTAM table constructed from PATH statements, that lists the communications controllers adjacent to the host computer (called *adjacent subareas*) that are used for cross-domain communication and indicates for each controller the subareas in other domains (called *destination subareas*) for which messages are to be routed through that controller.

peer NCP. An NCP that is attached to another NCP through a local-to-local link. Contrast with *remote NCP.* See also *local-to-local link.*

physical unit (PU). In SNA, one of three types of network addressable units; a PU is associated with each node that has been defined to a system services control point (SSCP). A PU controls the resources local to its associated node. The SSCP establishes a session with the physical unit as part of the bring-up process. See also *logical unit, system services control point.*

PIU. Path information unit.

plaintext. Synonym for *clear data.*

positive response. A response that indicates a request was received and processed successfully. Contrast with *negative response.*

primary application program. In a session, an application program that adheres to predefined primary protocols. Contrast with *secondary application program.*

primary end of a session. A network addressable unit (for example, a primary application program) that adheres to predefined primary protocols.

program operator. An ACF/VTAM application program that is authorized to issue network operator commands and receive ACF/VTAM network operator awareness messages. See also *solicited messages* and *unsolicited messages.*

protocol. A set of rules used by the network entities to accomplish an orderly exchange of information and control. See also *data flow control protocol.*

PU. Physical unit.

Q

queued for connection. In ACF/VTAM, the state of a terminal that has logged on to an application program but has not yet been accepted by that application program. See also *connection.*

quick closedown. In ACF/VTAM, a closedown in which current data-transfer operations are completed, while new connection and data-transfer requests are canceled. Contrast with *cancel closedown* and *orderly closedown.*

quiesce protocol. In ACF/VTAM, a method of communicating in one direction at a time. Either the application program or the logical unit assumes the exclusive right to send normal-flow requests, and the other node refrains from sending such requests. When the sender wants to receive, it releases the other node from its quiesced state.

R

RDT. Resource definition table.

record mode. In ACF/VTAM, a mode of data transfer in which the application program can communicate with logical units or with local non-SNA or remote 3270 Information Display Systems. Contrast with *basic mode.*

release. In ACF/VTAM resource control, to relinquish control of resources (communications controllers or physical units). See also *resource takeover.* Contrast with *acquire (2).*

remote. In ACF/VTAM, pertaining to devices that are physically connected through a communications controller.

remote NCP. An NCP that is not attached directly through a channel, but is attached through a data link to a local NCP that is channel-attached. Contrast with *local NCP* and *peer NCP.*

reply. In SNA, a request unit sent in reaction to a previously received request unit (command). See also *command (2).*

request. (1) A directive that causes a data transfer or related operation to be performed. Contrast with *response.* (2) In SNA, synonym for *request unit.*

request header. In SNA, a request/response header that indicates a request.

request parameter list (RPL). In ACF/VTAM, a control block that contains the parameters necessary for processing a request for data transfer, for connecting or disconnecting a terminal, or for some other operation.

request/response header (RH). In SNA, a control field, attached to a request/response unit (RU), that specifies the type of RU being transmitted–request or response–and contains control information associated with that RU. See also *request/response unit.*

request/response unit (RU). In SNA, the basic unit of information entering and exiting the transmission subsystem. It may contain data, acknowledgment of data, commands that control the flow of data through the network, or responses to commands.

request unit. In SNA, the request/response unit following a request header. Synonymous with *request.* See also *request/response unit.*

required cryptographic session. A cryptographic session in which all outbound data is enciphered and all inbound data is deciphered. Contrast with *selective cryptographic session* and *clear session.*

resource definition table (RDT). In ACF/VTAM, a table that describes for a major node the characteristics of each node available to ACF/VTAM and associates each node with an address.

resource takeover. In ACF/VTAM, the action of a network operator to transfer control of resources from one domain to another. See also *acquire (2)* and *release.*

responded output. In ACF/VTAM, a type of output request that is completed when a response is returned. Contrast with *scheduled output.*

response. (1) An answer to an inquiry. (2) The unit of information that is exchanged between ACF/VTAM or an ACF/VTAM application program and a SNA terminal to describe how a request arrived. (3) In SNA, synonym for *response unit.* (4) Contrast with *request.*

response header. In SNA, a request/response header that indicates a response.

response unit. In SNA, the request/response unit following a response header; it is sent in response to a request unit. Synonymous with *response*. See also *request/response unit.*

RH. Request/response header.

RPL. Request parameter list.

RPL-based macro instruction. In ACF/VTAM, a macro instruction whose parameters are specified by the user in a request parameter list.

RPL exit routine. In ACF/VTAM, a user-written routine whose address has been placed in the EXIT field of a request parameter list. ACF/VTAM invokes the routine to indicate that an asynchronous request has been completed. See also *EXLST exit routine.*

RU. Request/response unit.

S

scheduled output. In ACF/VTAM, a type of output request that is completed, as far as the application program is concerned, when the program's output data area is free. Contrast with *responded output.*

SDLC. Synchronous data link control.

SDLC cluster controller. A cluster control unit for a teleprocessing subsystem.

secondary application program. In a session, an application program that adheres to secondary session protocols. Contrast with *primary application program.*

secondary end of a session. A logical unit, secondary application program, or non-SNA terminal.

secondary logical unit (SLU) key. A primary key encrypting key used to protect a cryptographic session key during its transmission to the secondary end of the session.

selective cryptographic session. A cryptographic session in which an authorized application program is permitted to specify the enciphering of certain request units.

sequence number. A numerical identifier assigned by ACF/VTAM to each message exchanged between two nodes.

session. (1) The period of time during which a user of a terminal can communicate with an interactive system; usually, the elapsed time from when a terminal user logs on the system until the user logs off the system. (2) The period of time during which programs or devices can communicate with each other. (3) In SNA, a logical connection, established between two network addressable units (NAUs), that allows them to communicate. The session is uniquely identified by a pair of network addresses, identifying the origin and destination NAUs of any transmissions exchanged during the session. (4) In the NCP, a line-scheduling period. See *LU-LU session, SSCP-LU session, SSCP-PU session.*

session control. In SNA, one of the components of transmission control. It is responsible for allocating resources necessary for a session, for purging data flowing in a session if an unrecoverable error occurs, and for resynchronizing the data flow after such an error.

session limit. (1) In the network control program, the maximum number of concurrent line-scheduling sessions on a non-SDLC, multipoint line. (2) In SNA, the maximum number of simultaneous sessions a particular network addressable unit can support.

session parameters. Synonym for *logon mode.*

share limit. The limit of the number of SSCPs that can simultaneously share a resource.

shared. Pertaining to the availability of a resource to more than one user at the same time.

simulated logon. A logon generated for a terminal by ACF/VTAM at the primary application program's request. The primary application program accepts or rejects the terminal as if it had logged on.

single-channel-attached communications controller. A communications controller that is channel-attached to only one host computer.

single-thread application program. An ACF/VTAM application program that processes requests from terminals one at a time. Such a program usually requests synchronous operations from ACF/VTAM, waiting until each operation is completed before proceeding. Contrast with *multithread application program.*

SLU. Secondary logical unit.

SNA. Systems network architecture.

SNA terminal. In ACF/VTAM: (1) A physical unit, logical unit, or secondary application program. (2) A terminal that is compatible with systems network architecture.

SNBU. Switched network backup.

solicit. In ACF/VTAM, to obtain data from a BSC or start-stop terminal or from a local non-SNA 3270 terminal and move the data into ACF/VTAM buffers.

solicited message. A response from ACF/VTAM to a network operator command entered by a program operator. Contrast with *unsolicited message.*

specific-mode. In ACF/VTAM: (1) The form of read, receive, or solicit request that obtains data from one specific terminal. (2) The form of connection request that connects a specific terminal that has logged on. (3) Contrast with *any-mode.* See also *continue-specific mode.*

specific node. See *minor node.*

SSCP. System services control point.

SSCP ID. An identifying number associated with an SSCP (that must be unique in a multidomain system) that enables a device (especially a dial-in device) to identify an SSCP at a particular location and enables another SSCP to identify this SSCP when establishing a session with it.

SSCP-LU session. A session during which ACF/VTAM (the system services control point, SSCP) and a logical unit (LU) can communicate.

SSCP-PU session. A session during which ACF/VTAM (the system services control point, SSCP) and a physical unit (PU) can communicate.

subarea. A group of addressable elements in the network that have the same subarea ID.

subarea ID. A subfield of network address.

switched network backup (SNBU). An optional facility that allows a user to specify, for certain types of stations, a switched line to be used as an alternate path (backup) if the primary line becomes unavailable or unusable.

synchronous operation. In ACF/VTAM, a connection, communication, or other operation in which ACF/VTAM, after receiving the request for the operation, does not return control to the program until the operation is completed. Contrast with *asynchronous operation.*

synchronous request. In ACF/VTAM, a request for a synchronous operation. Contrast with *asynchronous request.*

system services control point (SSCP). In SNA, a network addressable unit that provides services via a set of command processors (network services) supporting physical units and logical units. The SSCP must be in session with each logical unit and each physical unit for which it provides services. It also provides services for the network operators or administrators who control the configuration. The SSCP is commonly located at a host node.

systems network architecture (SNA). The total description of the logical structure, formats, protocols, and operational sequences for transmitting information units through the communication system. Communication system functions are separated into three discrete areas: the application layer, the function management layer, and the transmission subsystem layer. The structure of SNA allows the ultimate origins and destinations of information—that is, the end users—to be independent of, and unaffected by, the specific communication-system services and facilities used for information exchange.

T

TC. Transmission control.

teleprocessing subsystem. In ACF/VTAM, a secondary or subordinate network and set of programs that are part of a larger teleprocessing system; for example, the combination consisting of an SDLC cluster controller, its stored programs, and its attached terminals.

teleprocessing system. A data processing system in combination with data communication facilities.

terminal. (1) A device, usually equipped with a keyboard and some kind of display, capable of sending and receiving information over a communication channel. (2) In ACF/VTAM, the secondary end of a session; that is, a logical unit, a start-stop or BSC device, a local non-SNA 3270 device, or an application program.

terminal component. A separately addressable part of a terminal that performs an input or output function, such as the display component of a keyboard-display device or a printer component of a keyboard-printer device.

terminal system. In a data communication network, a terminal control unit or a cluster control unit and its attached devices. Synonymous with *teleprocessing subsystem.*

TH. Transmission header.

transmission. In data communication, one or more blocks or messages. For BSC and start-stop devices, a transmission is terminated by an EOT character. See also *block* and *message.*

transmission control (TC). In SNA, one of three components of the transmission subsystem. It has three subcomponents: the connection point manager, session control, and network control. It establishes, controls, and terminates sessions, and also controls the flow of information into and out of the common network for a session between network addressable units. It provides access to the transmission subsystem; this direct access is used by function management components. A transmission control element exists for each active session. See also *data link control, path control.*

transmission header (TH). In SNA, a control field attached to a basic information unit (BIU) or to a BIU segment, and used by path control. It is created by the sending path control component and interpreted by the receiving path control component. See also *path information unit.*

transmission subsystem. In SNA, the innermost layer of the communication system. It provides the control in each session to route and move data units between NAUs, and to manage the NAUs and their interconnecting paths. Its three constituent parts are data link control, path control, and transmission control. See also *application layer function management.*

U

unformatted system services (USS). A portion of ACF/VTAM that translates a character-coded command, such as a logon or logoff command, into a field-formatted command for processing by formatted system services (FSS). Contrast with *formatted system services (FSS)* and *character-coded.*

unsolicited message. A network operator message, from ACF/VTAM to a program operator, that is unrelated to any command entered by the program operator. Contrast with *solicited message.*

user logon data. Synonymous with *logon data (1).*

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