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A Series

Communications Management System (COMS)

Operations Guide

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○ New Release　● Revision　○ Update　○ New Mail Code

Title

A Series Communications Management System (COMS) Operations Guide

This Product Information Announcement announces a revision of the *A Series Communications Management System (COMS) Operations Guide*. The revision is relative to the Domain Name Service (DNS) kit, dated June 1993, which is based on the Mark 4.0.1 System Software Support Release.

This revision includes information to support the implementation of domain name services on A Series systems.

The major changes described in this revision are as follows:

● Addition of the BNA hostname, IP address, and domain name attributes of the CONNECT command

● Elimination of the Kernel version of COMS, and all distinctions between it and COMS Full-Featured

● Revised descriptions of control-capable users and stations, and clarification of the control character requirements for entering COMS commands from different terminal-to-host connections

● A new automatic file backup and removal procedure for controlling COMS and database transaction trails

● A more detailed explanation of the diagnostic TRACE command, and a separate section for using the Trace Analyzer

Various technical and editorial changes have also been made to improve the quality and usability of the document.

Changes are indicated by vertical bars in the margins of the revised pages.

Retain this Product Information Announcement as a record of changes made to the base publication.

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A Series

Communications Management System (COMS)

Operations Guide

Page Status

Page	Issue
iii	–100
iv	Blank
v through xiii	–100
xiv	Blank
xv	–100
xvi	Blank
1–1 through 1–13	–100
1–14	Blank
2–1 through 2–8	–100
3–1 through 3–12	–100
4–1 through 4–21	–100
4–22	Blank
5–1 through 5–6	–100
6–1 through 6–10	–100
7–1 through 7–16	–100
8–1 through 8–18	–100
A–1 through A–8	–100
B–1 through B–4	–100
C–1 through C–9	–100
C–10	Blank
Glossary–1 through 12	–100
Bibliography–1	–100
Bibliography–2	Blank
Index–1 through 8	–100

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About This Guide

Purpose

This document is a guide for using the Communications Management System (COMS), a Unisys message control system (MCS). The purposes of the guide are as follows:

- It explains how to perform terminal-based COMS functional tasks.
- It serves as a reference guide by providing syntactical diagrams.

The COMS product, which is a member of the InterPro (Interactive Productivity) series of products, is designed for use with Unisys A Series systems.

Scope

In this guide you can find information on controlling sessions, controlling the COMS network, and retrieving information. The guide also contains backup guidelines and recovery procedures associated with COMS.

Audience

This guide is written for computer operators and terminal-based users of COMS.

Prerequisites

Terminal-based users of COMS need little experience using a data communications system. Computer operators need to understand the COMS configuration of the site and need to have access to the names of programs, databases, and processing-item libraries within each application window. Operators also need to know what stations and devices have been defined in the COMS environment.

How to Use This Guide

The subject matter of this guide is presented in a functional manner. To find out which functions are discussed and which commands are grouped under a function, use the table of contents. If you want information about a specific command, the index can also refer you to the appropriate pages. Each command has its own index entry, but a comprehensive alphabetical list of COMS commands appears under the index

heading "COMS commands." Appendix A, "System Messages," contains a list of COMS error messages and their interpretation. Appendix B, "Basic Constructs," contains definitions of the variables that appear in the railroad diagrams in this guide. Appendix C, "Understanding Railroad Diagrams," contains an explanation of railroad diagrams. A glossary defines terminology that is related to COMS. Acronyms found in this guide are spelled out and defined in the glossary.

Manuals relevant to this product are given their full names in the "Related Product Information" portion of this preface. In text, manuals are referenced by their full titles and subsequent references use a shortened version of their titles. Unless otherwise specified, manuals referred to in text are for A Series machines. This guide is organized with the following sections:

Organization

Section 1. Overview

An overview of COMS for the systems operator is provided. First, control-capable users and stations are discussed. Then, the window feature in COMS is explained. Next, some of the functions that can be performed through the commands provided by COMS are indicated, and the methods for entering COMS command from different terminal connections are explained. Finally, the naming conventions for COMS files are discussed.

Section 2. Controlling Sessions

The terminal-based operations for controlling COMS sessions at your station are presented. The following COMS commands are discussed: HELLO, BYE, PASSWORD, and TO.

Section 3. Controlling Window Dialogs

The terminal-based operations for controlling window dialogs in a COMS session are presented. The following COMS commands are discussed: ON, CLOSE, PASS, SUSPEND, and RESUME.

Section 4. Controlling the COMS Network

The terminal-based operations for controlling the COMS network are presented. The following COMS commands are discussed: ADDSTA, MOVE, SUBTRACT, SWAP, ATTACH, ENABLE, DISABLE, READY, SAVE, CONNECT, MCS, RELEASE, RECALL, PURGE, ENABLE, and DISABLE.

Section 5. Controlling Transaction Trails

The terminal-based operations for controlling transaction trails are presented. The following COMS commands are discussed: COMS and DATABASE.

Section 6. Initialization, Shutdown, Backup, and Recovery

Instructions for initializing COMS and for shutting down the COMS network are presented. Guidelines and examples for performing COMS-related backups are also presented. Exceptional situations where operator action is needed to recover a COMS database, configuration file, or protected output messages are discussed. The COMS *QUIT* command is also discussed.

Section 7. Retrieving Information Related to COMS

The terminal-based operations for retrieving various kinds of information are presented. A discussion of the HELP command provided through the Menu-Assisted Resource Control (MARC) is also provided. The following COMS commands are discussed: REPORT, STATUS, WINDOWS, JOBS, MONITOR, and TRACE.

Appendix A. System Messages

Messages you see on the terminal screen in response to COMS commands are listed. Error messages are included. Except for messages that begin with a variable, all messages are listed in alphabetical order. Messages beginning with a variable are listed after the alphabetical listing. Each message is provided with an explanation and the appropriate response.

Appendix B. Basic Constructs

Variables that appear in railroad syntax diagrams are defined.

Appendix C. Understanding Railroad Diagrams

An explanation of railroad diagrams is provided.

In addition, a glossary, a bibliography, and an index appear at the end of this guide.

Related Product Information

The information in this guide is supplemented by the following documents, which pertain to COMS:

A Series Communications Management System (COMS) Capabilities Manual
(8600 0627)

This manual introduces COMS, discusses the flexibility and efficiency of the COMS system, describes the COMS architecture, and discusses specific features available to the COMS user. This manual is written for upper management, the site manager, and the programming staff.

A Series Communications Management System (COMS) Configuration Guide
(8600 0312)

This guide provides an overview of the basic concepts and functions of COMS. It includes instructions for creating a working COMS configuration and information on

how to monitor and fine-tune COMS system performance. This guide is written for installation analysts, systems analysts, programmers, administrators, and performance analysts.

A Series Communications Management System (COMS) Migration Guide (8600 1567)

This guide explains how to migrate from existing message control systems (MCSs) to the current release of COMS. This guide is written for system administrators and system programmers who are responsible for the migration of their site to COMS.

A Series Communications Management System (COMS) Programming Guide (8600 0650)

The guide explains how to write online, interactive, and batch application programs that run under COMS. This guide is written for experienced applications programmers with knowledge of data communication subsystems.

Contents

Contents

Contents

Figures

Tables

Section 1
Overview

The Communications Management System (COMS) is an extremely flexible, high-performance message control system (MCS). COMS supports a wide range of online transaction processing, message routing, and security operations for user networks on A Series systems, including the following:

- User log on/log off control
- Station-to-station message routing
- Multiple window dialogs from a single station
- Datacomm network and error handling
- Menu-Assisted Resource Control (MARC) interface

COMS uses a configuration file to define the operational characteristics and control environment of the user network. The COMS Utility program allows you to tailor the configuration file, initially, to meet your current needs, and then to modify it as required in response to future needs. Additionally, you can use the COMS Utility to implement the following:

- Online configuration/reconfiguration
- Customized user interfaces
- Access security
- Transaction-based message routing
- Transaction trail diagnostics and synchronized recovery

This section provides a brief overview of COMS for the system operator. The following subsections describe:

- Control-capable users and stations
- The COMS window features
- The COMS operational commands, including their functions and instructions for entering them from different terminal connections
- The COMS file-naming conventions

Control-Capable Users and Stations

Most of the operational functions and features of COMS are available to all COMS users. These allow you to perform routine session and window control functions, and to determine certain information about available COMS resources.

Some COMS functions and features are only available to control-capable users or stations. These provide control functions for the network of stations, lines, programs, windows, databases, and processing-item libraries that are interconnected by COMS.

Control capability for users and stations can be granted either through COMS by declarations in the COMS configuration file, or at the system level by declarations in the USERDATAFILE or the DATACOMINFO file.

Control-Capable Users

To access the COMS control functions, a user must be defined as control capable by a usercode with either of the following:

- Control attribute = Y (yes) in the COMS configuration file
- COMSCONTROL attribute = TRUE in the system USERDATAFILE

Note: *A control-capable user can access the COMS control functions from any station.*

Control-Capable Stations

To access the COMS control functions, a station must be defined as control capable by either of the following:

- Control attribute = Y (yes) in the COMS configuration file
- SPO attribute = TRUE in the system DATACOMINFO file

Note: *Any user can access the COMS control functions from a control-capable station.*

COMS Window Feature

COMS provides a window feature that enables you to operate a number of program environments independently and simultaneously in a COMS session at a station. Each window has a name that you can specify in commands to perform various functions in that window's program environment.

A COMS session is the period of time during which you are logged on to COMS and can communicate with the system. When you log off from COMS, the session is ended.

In a COMS session, you can move from window to window. You can view a program environment operating in one window while the program environments in the other windows continue to operate. For example, you can have access to two message control systems, three multistation interactive remote programs, and two transaction processing programs, all operating at the same time that one of these program environments is being viewed. This means that you can switch between program

environments without logging off one to view the next. The window through which you
are viewing a program environment is called the current window.

Each access to a program environment through a window is called a dialog, or
window dialog. COMS enables you to have multiple dialogs with the same window
simultaneously during your COMS session. Each dialog in your COMS session
constitutes an independent session with a program environment. Thus, COMS enables
you to perform a variety of activities associated with either one or a number of program
environments in a single COMS session at your station. The access to the program
environment that you are viewing is called the current dialog, or current window
dialog.

COMS assigns numbers to window dialogs. When you log on to COMS, your current
dialog is dialog 1 of a given window (the particular window is determined by COMS on
the basis of usercode or station-identity criteria). If you establish another independent
access to the same program environment, you then have two dialogs, dialogs 1 and 2, of
the same window. If you next establish an access to a different program environment,
you have dialog 1 of the window for that environment as well as dialogs 1 and 2 of the
initially accessed window. If, for example, you next establish access to a window such as
PAYROLLUPDATE, you will be on PAYROLLUPDATE/1, as well as dialogs 1 and 2 of
your initial window.

The default window in a session is the Menu-Assisted Resource Control (MARC)
window, unless a different default window has been defined through the COMS
Utility for the usercode or station involved in the session (refer to "Starting a New
Session: HELLO Command" in Section 2, "Controlling Sessions"). The dialog number
for a default window is dialog 1.

Tables 1-1 and 1-2 describe the windows that COMS predefines and the types of
windows that users can define using the COMS Utility program.

Table 1-1. Predefined COMS Windows

Window Name	Description
MARC	The MARC window provides access to the MARC program. One of the functions of the MARC program is to provide menu-assisted access to system and network command functions. The MARC window is always in operation in COMS.
Utility	The Utility window provides access to the COMS Utility. The COMS Utility is used to define and change entities in the COMS configuration file. This window can only be accessed by control-capable users or from control-capable stations.
CANDE	The Command and Edit (CANDE) window provides access to the CANDE message control system (MCS), if you have CANDE on your system.
GEMCOS	The GEMCOS window provides access to the Generalized Message Control System (GEMCOS), if you have GEMCOS on your system.

Table 1–1.   Predefined COMS Windows (cont.)

Window Name	Description
Statistics	The Statistics window provides access to the COMS statistics program. The COMS statistics program enables you to monitor online the performance of programs running in the COMS environment. The COMS statistics program also enables you to generate printed reports that show COMS window, program, and transaction performance.
Printing	The Printing window provides access to the Print System. For specific information about this system, refer to the *A Series Print System (PrintS/ReprintS) Administration, Operations, and Programming Guide.*

Table 1–2.   User-Defined COMS Windows

Window Type	Description
Direct	Direct windows are either predefined by COMS or defined to COMS through the COMS Utility program. The MARC window and the Utility window are examples of direct windows that are predefined by COMS.
MCS	MCS windows are either predefined by COMS or defined to COMS through the COMS Utility program. The CANDE and GEMCOS windows are examples of MCS windows that are predefined by COMS.
Remote-File	Remote-file windows provide access to programs that communicate interactively with terminals through remote files. Remote-file windows are either declared or dynamic: • Declared remote-file windows provide access to programs that are defined to COMS through the COMS Utility. You can use these to create either single-user or multiuser environments within COMS. • Dynamic remote-file windows provide access to programs that are not defined to COMS. (Refer to Section 3, "Controlling Window Dialogs," for information on the naming of dynamic remote-file windows.) For more complete information on remote-file windows, refer to the *A Series Communications Management System (COMS) Programming Guide.*

COMS Commands

COMS provides simple online commands for the following purposes:

- Controlling COMS sessions and windows, as follows:

  HELLO, BYE, PASSWORD, TO, ON, CLOSE, PASS, SUSPEND and RESUME

- Controlling the COMS network, as follows:

  ADDSTA, MOVE, SUBTRACT, SWAP, ATTACH, ENABLE, DISABLE, RECALL, PURGE, READY, SAVE, CONNECT, MCS and RELEASE

- Controlling transaction trails, as follows:

  COMS and DATABASE

- Retrieving information related to COMS, as follows:

  REPORT, STATUS, WINDOWS, JOBS, MONITOR and TRACE

Functions of COMS Commands

Following are lists of the most common things you can do using COMS commands, depending on whether you are a regular COMS user or a control-capable COMS user.

All COMS users have access to the COMS commands that perform the following tasks:

- Start or end a session
- Send messages to other stations or the operator display terminal (ODT)
- Move from one window dialog to another
- Enter text to another window dialog
- Close window dialogs
- Suspend output messages from window dialogs
- Determine which windows are available to your station
- Determine which programs are running in a specific window

Control-capable users and users at control-capable stations have access to the COMS commands that perform the following tasks:

- Add stations to a line
- Enable or disable stations, programs, windows, or databases
- Disable processing-item libraries
- Shut down the COMS network
- Determine which windows are available to a specific station
- Display or print a list of specified activities such as beginning of job (BOJ) and attempted breach of security
- Access COMS diagnostic data

Entering COMS Commands

All COMS commands must be prefixed by one or more control characters, depending on how your terminal is connected to the destination host and whether the command is intended for COMS or for another MCS. Some of the COMS commands are identical to other MCS commands. For these, the number of control characters in the command prefix determines whether the command is accepted by COMS or passed on to the other MCS.

The default control character is determined by the network software (DATACOM, HLCN, BNA, for example). All of the command examples in this guide use the question mark (?) as the control character.

Note: *Control characters are not required when you enter COMS commands from the Action field of a MARC window.*

For further information on using the MARC menu to enter COMS commands, refer to the MARC online help information and the *A Series Menu-Assisted Resource Control (MARC) Operations Guide.*

The following three subsections explain the control character requirements for terminals connected to the destination host in either of three ways:

- Directly, through either a Host LAN Connection (HLCN) or an NSP/LSP, DCDLP, or EDCDLP DATACOM device

- Locally, through either a CP 2000 or a communications processor data link processor (CPDLP)

- Remotely, through both a CP 2000 or CPDLP and a local host

Entering COMS Commands from a Directly Connected Terminal

If your terminal is connected directly to a local destination host, as shown in Figure 1-1 (through either an HLCN or an NSP/LSP, DCDLP, or EDCDLP DATACOM device), valid COMS commands that are prefixed with a single control character are accepted and processed by COMS. These can be entered from any direct, remote-file, or MCS window. Additionally, from an MCS window, commands that are prefixed with two control characters are passed on to the associated MCS, as are commands that you enter with a single control character that are not valid COMS commands.

When COMS receives a control command from an MCS window, it first checks the second character of the command. If the second character is also a control character, it strips off one and passes the command — with one less control character — on to the associated MCS. If the second character is not a control character, COMS then parses the remainder of the command. If it is a valid COMS command, COMS processes the command. Otherwise, COMS passes the entire command — single control character intact — on to the associated MCS.
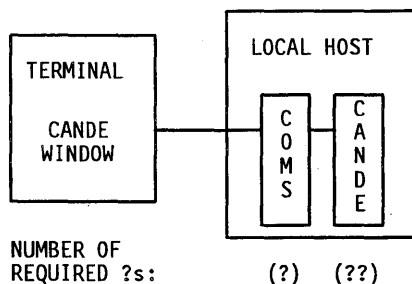
Figure 1-1. Entering Commands from a Directly Connected Terminal

The following examples use four commands to show the number of control characters
required for terminals connected directly to the local host:

- STATUS, which is recognized by both COMS and CANDE

- CLOSE, which is recognized by COMS, but not by CANDE

- DS, which is recognized by CANDE, but not by COMS

- JUNK, which is not recognized by either COMS or CANDE

Command Examples

Command	Recognized By		Control Characters
	COMS	CANDE	
STATUS	Y	Y	? = Handled by COMS
			?? = Handled by CANDE
CLOSE	Y	N	? = Handled by COMS
			?? = Rejected by CANDE
DS	N	Y	? = Handled by CANDE
			?? = Handled by CANDE
JUNK	N	N	? = Rejected by CANDE
			?? = Rejected by CANDE

Note: *Since CANDE recognizes command abbreviations, commands that
are recognized by both COMS and CANDE can be directed to CANDE
without the second control character by using the abbreviated version
of the command. The STATUS command, for example, could be
presented to CANDE by entering either ??STATUS or ?STA.*

Entering COMS Commands from a Locally Connected Terminal

If your terminal is locally connected to the destination host through either a CP 2000, as shown in Figure 1-2, or a communications processor data link processor (CPDLP), an additional control character is required to pass commands through the CP 2000 or CPDLP.

When a CP 2000 or a CPDLP receives a control command from a connected terminal, it first checks the second character of the command. If the second character is also a control character, it strips off one and passes the command – with one less control character – on to the destination (local) host. If the second character is not a control character, the CP 2000 or CPDLP then parses the remainder of the command. If it is a valid CP 2000 or CPDLP command, the CP 2000 or CPDLP processes the command. Otherwise, it passes the entire command – single control character intact – on to the local destination host. In either case, at the destination host, the command is handled as though it came from a directly connected terminal.
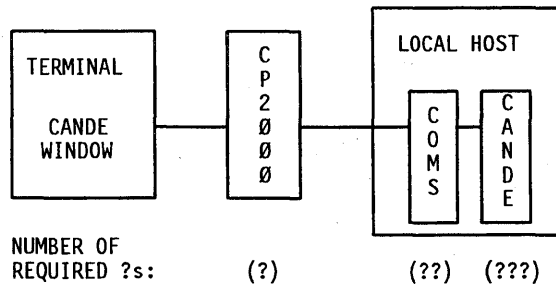
Figure 1-2.   Entering Commands from a Locally Connected Terminal

The following examples show the number of control characters required for stations connected through a CP 2000 or CPDLP device to a local destination host.

Command Examples

		Recognized By		
Command	CP 2000	COMS	CANDE	Control Characters
WRU	Y	Y	Y	? = Handled by the CP 2000 and by COMS
				?? = Handled by COMS
				??? = Handled by CANDE

continued

continued

Recognized By

Command	CP 2000	COMS	CANDE	Control Characters
STATUS	N	Y	Y	? = Handled by COMS
				?? = Handled by COMS
				??? = Handled by CANDE
CLOSE	N	Y	N	? = Handled by COMS
				?? = Handled by COMS
				??? = Rejected by CANDE
DS	N	N	Y	? = Handled by CANDE
				?? = Handled by CANDE
				??? = Handled by CANDE
JUNK	N	N	N	? = Rejected by CANDE
				?? = Rejected by CANDE
				??? = Rejected by CANDE

Note: The generic WRU (who are you) command is recognized both by COMS and by CP 2000 and CPDLP devices. When entered with a single control character, the WRU command is an exception to the general rule in that CP 2000 and CPDLP devices both process the command and pass it on to the local host.

If you do not know if you have a CP 2000 or CPDLP interface, you can use a series of ?WRU commands to determine the number of control characters that are required to reach a destination anywhere in the chain of connections. Do this by adding a question mark to each succeeding WRU entry until the desired destination responds to the command.

Entering COMS Commands from a Remotely Connected Terminal

If your terminal is remotely connected to the destination host through both a CP 2000 or CPDLP and a local host as shown in Figure 1–3, yet another control character may be required, as shown in the command examples that follow the figure.


```
  +-------------+   +---+   +--LOCAL HOST--+   +--REMOTE HOST--+
  |  TERMINAL   |   | C |   |              |   |               |
  |             |   | P |   |  +---+       |   |  +---+ +---+   |
  |    MCS      |---| 2 |---|  | C |       |---|  | C | | C |   |
  |   WINDOW    |   | 0 |   |  | O |       |   |  | O | | A |   |
  |             |   | 0 |   |  | M |       |   |  | M | | N |   |
  |             |   | 0 |   |  | S |       |   |  | S | | D |   |
  +-------------+   +---+   |  +---+       |   |  +---+ | E |   |
                           +--------------+   +--------+---+---+

  NUMBER OF
  REQUIRED ?s:     (?)          (??)            (???)    (????)
```

Figure 1–3. Entering Commands from a Remotely Connected Terminal

Command Examples

		Recognized By		
Command	CP 2000	COMS	CANDE	Control Characters
WRU	Y	Y	Y	? = Handled by the CP 2000 and by local COMS
				?? = Handled by local COMS
				??? = Handled by remote COMS
				???? = Handled by CANDE
STATUS	N	Y	Y	? = Handled by local COMS
				?? = Handled by local COMS
				??? = Handled by remote COMS
				???? = Handled by CANDE
CLOSE	N	Y	N	? = Handled by local COMS
				?? = Handled by local COMS
				??? = Handled by remote COMS
				???? = Rejected by CANDE

continued

continued

| | | Recognized By | | |
Command	CP 2000	COMS	CANDE	Control Characters
DS	N	N	Y	? = Handled by CANDE
				?? = Handled by CANDE
				??? = Handled by CANDE
				???? = Handled by CANDE
JUNK	N	N	N	? = Rejected by CANDE
				?? = Rejected by CANDE
				??? = Rejected by CANDE
				???? = Rejected by CANDE

COMS File Names

The names of the COMS system files are standardized so that they can be easily located under a common directory name.

COMS Code File Names

The COMS code file names use the following format:

```
<MCS name>/<module name> ON <COMS pack>
```

The MCS name is the name of the COMS MCS code file (the default is *SYSTEM/COMS). For example, the module name can be INTERFACE or TRACE. The COMS pack is the pack on which the MCS code file resides.

For example, if the MCS code file is *SYSTEM/TESTCOMS ON COMSPACK, the files have the following names:

```
*SYSTEM/TESTCOMS ON COMSPACK
*SYSTEM/TESTCOMS/TRACE ON COMSPACK
*SYSTEM/TESTCOMS/INTERFACE ON COMSPACK
```

Two exceptions to these code file naming rules are as follows:

- The ODT/DRIVER module code file must be named *COMS/ODT/DRIVER.

- The SL (Support Library) command is used to link the Protocol-Specific Handler/Terminal Transport Protocol (PSH/TTP) code file with the COMSTTPSUPPORT function; therefore, the PSH/TTP code file is not required to follow these rules.

COMS Code File Identities

Each COMS code file has an identity attribute associated with it. The identity attribute replaces the word DISPLAY on all output messages from COMS to the system console. This helps the operator identify the COMS subsystem associated with each display message. Table 1–3 lists the identity that is associated with each COMS code file.

Note: *These identities can be changed by a system operator using the MP*
(Mark Program) system command.

Table 1–3. COMS Code File Identities

Code File Name	Identity
SYSTEM/COMS	COMS
SYSTEM/COMS/INTERFACE	COMS
SYSTEM/COMS/FORMAT/SUPPORT/LIBRARY	FSLIB
SYSTEM/COMS/LANGUAGE/SUPPORT	COMSLANGSUPP
SYSTEM/COMS/PSH/TTP	TTP
SYSTEM/COMS/PSH/TTP/DIAGNOSTICS	TTP
SYSTEM/COMS/TRACE	COMSTRACE
COMS/ODT/DRIVER	ODTDRIVER

COMS Data File Names

The COMS data file names use the following format:

```
(UC)<MCS prefix>/<data name>
```

UC refers to the usercode under which the COMS MCS is running. MCS prefix is the name of the COMS MCS code file, except that the first node is omitted if it is SYSTEM. Data name is one of the following:

```
CFILE ON <COMS pack>
INPQ ON <specified pack>
TANK ON <specified pack>
TTRAIL/<database name>/<file number> ON <specified pack>
TRACE/<date>/<time> ON <COMS pack>
OUTPQ/<POF name> ON <specified pack>
```

COMS pack refers to the pack on which the MCS code file resides. Specified pack refers to the pack specified in the COMS Utility for the appropriate entity type. POF

(protected output file) refers to a disk file that contains protected output messages sent to their destinations after a transaction has been completed.

Except for the data files produced by the COMS statistics program, these data files do not follow the COMS file naming conventions because of the ERGO product requirements.

For example, if the MCS code file is *SYSTEM/TESTCOMS ON COMSPACK, with the TEST usercode, the files are named as follows:

```
(TEST)TESTCOMS/CFILE ON COMSPACK
(TEST)TESTCOMS/INPQ ON USERSPACK
(TEST)TESTCOMS/TANK ON USERSPACK
(TEST)TESTCOMS/TTRAIL/TPLIBRARY/0001 ON USERSPACK
(TEST)TESTCOMS/TTRAIL/TESTDB/0003 ON USERSPACK
(TEST)TESTCOMS/TRACE/010890/113523 ON COMSPACK
(TEST)TESTCOMS/OUTPQ/TESTPOF ON COMSPACK
```

COMS Utility Program Default Data File Names

The COMS Utility program default data file names all use the following format:

```
(UC)<MCS prefix>/<data name> ON <family>
```

UC refers to the usercode associated with the user requesting the function. MCS prefix is the name of the COMS MCS code file, except that the first node is omitted if it is SYSTEM. Examples of data file names are as follows:

```
(OPS)TESTCOMS/DUMP/PIL/010890/113523 ON OPSPACK
(OPS)TESTCOMS/REPORT/010890/113523 ON OPSPACK
(OPS)TESTCOMS/ERRORFILE/010890/113523 ON OPSPACK
(OPS)TESTCOMS/DELETE/010890/113523 ON OPSPACK
```

The COMS statistics program produces several data files. These data files do not follow the COMS file naming conventions because of the requirements of the ERGO product.

Section 2
Controlling Sessions

The operations for controlling sessions at your station after you have logged on to the system are presented in this section. Except for the TO command, the commands in this section are applicable only in the MARC window. The commands HELLO and BYE can be used in other windows if programming has been provided for these commands.

The functions that enable you to control COMS sessions are listed in Table 2-1. They are followed by the names of the commands that correspond to each function. These commands are valid for any user at any station.

Table 2-1.   Controlling COMS Sessions

Function	Command
Starting a new session	HELLO
Ending a session	BYE
Changing passwords	PASSWORD
Sending messages to other stations or the operator display terminal (ODT)	TO

The remainder of this section discusses each function and command in detail.

Starting a New Session: HELLO Command

Use the HELLO command to start a new session from the MARC menu at your station. This command is valid for any user at any station and is never entered with a control character as prefix.

When you start a new session, the following actions occur:

1. The current session at your station (if any), is ended.

2. All the window dialogs that were opened at your station during the current session are closed. A new dialog 1 of the Menu-Assisted Resource Control (MARC) window is opened.

3. Dialog 1 of the MARC window becomes your current dialog, with the following exceptions:

   ● If a default window other than the MARC window is set for your usercode, dialog 1 of the default window is opened as your current dialog if the current user count for the window is less than the maximum. If the current user count for the window is at the maximum, the close action takes effect. (Refer to "Closing Window Dialogs: CLOSE Command," in Section 3 of this guide.)

   ● If a default window other than the MARC window is not set for your usercode, but is set for your station or required by the communications processor, dialog 1 of the default window is opened as your current dialog if you are a valid user of the window and the current user count for the window is less than the maximum. If you are not a valid user of the window or the current user count for the window is at the maximum, the close action takes effect. (Refer to "Closing Window Dialogs: CLOSE Command," in Section 3 of this guide.)

4. User counts for the affected windows are adjusted.

5. The new session begins.

   Note: A new session cannot be started if messages are tanked for window dialogs opened during the current session. Refer to "Ending a Session: BYE Command" later in this section for pertinent instructions.

The HELLO command enables you to start a session in the following ways:

● In interactive mode. The system prompts you to enter your usercode and, in some cases, your password.

● With only a usercode.

● With a usercode and a password.

Syntax

```
— HELLO ┬─────────────────────────────────────────── %
        └<usercode>┬──────────────────────┬
                   └┬──────┬─<password>───┘
                    └  /  ─┘
```

Explanation

HELLO

Displays the log-on menu. Enter your usercode in the field labeled Please Enter Your Usercode, followed by a space and your password (if required). This results in one of the following actions:

● If a password is not required, a new session is started.

● If a password is required and you have not entered it yet, the log-on menu is displayed again. To start a new session, enter your usercode in the field labeled Please enter Your Usercode, and enter your password in the secured field labeled And Your Password.

● If the system does not accept the usercode or password you entered, reenter a valid usercode or password.

HELLO <usercode>

> Starts a new session from a display other than the log-on menu provided by MARC if a password is not required.

HELLO <usercode> <password>
HELLO <usercode> / <password>

> Starts a new session from a display other than the log-on menu provided by MARC when your usercode and your password are required.

Ending a Session: BYE Command

Use the BYE command to end a session at your station. This command is valid for any user at any station and is never entered with a prefix.

When you end a session, the following actions occur:

- All the window dialogs that were opened at your station during the session are closed. A new dialog 1 of the MARC window is opened.

- The user count for each affected window is reduced to reflect the closed dialogs.

- All message suspension that was set for window dialogs in the session through the SUSPEND command is cleared.

When you are logged off at the terminal, subsequent messages directed to your terminal are discarded. An error message is returned to the sending program.

The BYE command enables you to end a session with no tanked messages or to end a session and purge tanked messages.

Syntax

```
— BYE ─┬─────────┬──────────────────────────────%
        └─ PURGE ─┘
```

Explanation

BYE

Ends a session when no messages are tanked for any window dialogs opened during a session. If you enter BYE when messages are tanked, the following error message is displayed for each window dialog with tanked messages:

    Window <window name>/<dialog number> cannot be closed at
    this time; Tanked outputs exist.

The session is not yet ended. You can view the tanked messages by using the RESUME command or the ON command. After all the tanked messages from all the window dialogs have been displayed, you can end the session by entering BYE, or you can continue the session. The RESUME and ON commands are described in Section 3, "Controlling Window Dialogs."

BYE PURGE

Ends a session and purges (eliminates) all messages tanked for all window dialogs opened during the session.

Changing Passwords: PASSWORD Command

Use the PASSWORD command to change or delete the password associated with your usercode or to alter a list of passwords if more than one password is associated with your usercode. This command is valid for any user at any station and is never entered with a prefix.

You cannot change a password or password list at a time when the USERDATAFILE is "frozen." Any attempt to do so causes the system to display the following error message:

```
USERDATAFILE frozen; try later.
```

When you change your password (or list of passwords), you must use your new password (or valid password from the list) to log on at your station.

More than one password can be associated with a usercode. The number of passwords that can be defined for a given usercode depends on the MINPW (minimum passwords) and MAXPW (maximum passwords) constraints established in the USERDATAFILE. All passwords have the same file access and privileges. For additional information about USERDATAFILE constraints, refer to the *A Series Security Administration Guide.*

When the plus (+), minus (–), or equal (=) sign is used to alter a list of passwords, you must know which password is first in the list. In the examples that follow, the first password in the list is XXX.

The PASSWORD command provides you with the following capabilities:

- Changing a password

- Deleting a password

- Adding a password to a list

- Deleting a password from a list

- Replacing all passwords in a list with a single password

Syntax

```
— PASSWORD ──┬─<old password>─┬─<new password>──<new password>─────────┬─%
             │                └─ - ──<old password>──<old password>─┤
             └─<first password in list>──<options>──────────────────┘
```

```
<options>

──┬─ + ──<new password>──<new password>──────────┬─────────────────%
  ├─ = ──<new password>──<new password>──────────┤
  └─ - ──<target password>──<target password>────┘
```

Explanation

PASSWORD <old password> <new password> <new password>

Changes a password if only one password is associated with your usercode. If you have
a list of passwords associated with your usercode, you can use the same syntax to
change a specific password.

For example, the following command changes the password associated with your
usercode from ABC to XYZ:

    PASSWORD ABC XYZ XYZ

PASSWORD <old password> – <old password> <old password>

Deletes your password if only one password is associated with your usercode. When you
use this command option, a password is no longer associated with your usercode when
you log on. After you delete your password, you can create a new one when logging on
by entering the new password in one of two ways: enter your usercode in the Usercode
field, use the space bar to create one space, and enter the new password; or enter the
new password in the Password field.

For example, the following command deletes password ABC and is no longer used in
association with the usercode in the log-on procedure:

    PASSWORD ABC - ABC ABC

PASSWORD <first password in list> + <new password> <new password>

Adds a password to a list.

For example, the following command adds password GHI to the list:

    PASSWORD XXX + GHI GHI

PASSWORD <first password in list> = <new password> <new password>

Replaces all passwords associated with a usercode with a single password.

For example, the following command causes password MNO to replace all the
passwords that are associated with the usercode:

    PASSWORD XXX = MNO MNO

PASSWORD <first password in list> – <target password> <target password>

Deletes a password from a list.

For example, the following command deletes password JKL from a list:

```
PASSWORD XXX - JKL JKL
```

Sending Messages: TO Command

Use the TO command to send a message to other stations or to the ODT. Usage restrictions for this command vary according to syntax options, and it must be entered with a question mark (?) prefix in all windows except MARC.

When the message is sent to a station, it is directed to dialog 1 of the MARC window. The message is displayed if this dialog is unsuspended or is the current window dialog of the station. Otherwise, the message is tanked.

The TO command enables you to send messages to the following destinations:

- The ODT
- All stations
- All stations that have a specific window open
- All stations within a logical station number (LSN) range
- Specific stations
- Stations where a specific usercode is logged on

Syntax

```
— TO ─┬─ ODT ─────────────────────────┬───────┬─<text>────────%
       ├─ ALL ─────────────────────────┤   └─ : ─┘
       ├─ WINDOW ─<declared window name>┤
       ├─ STATION ─<station list>───────┤
       └─<usercode>─────────────────────┘
```

```
<station list>

────┬──┌←──────,──────┐─────────────────────────────────%
    │  └─<station name>─┘
    ├──┌←──,──┐
    │  └─<LSN>─┘
    └─<LSN>── - ──<LSN>─┘
```
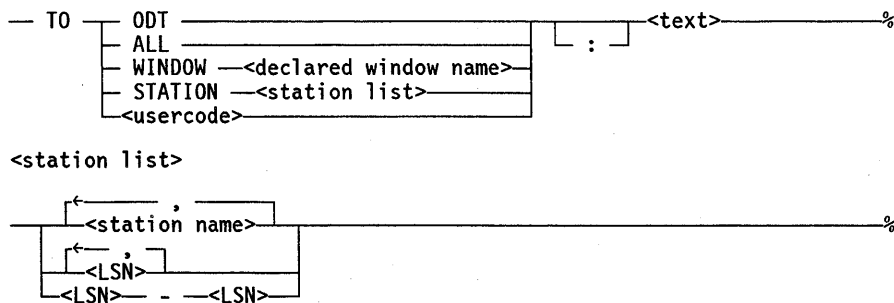
Explanation

Note: *If you use a colon with this command, any spaces after the colon are inserted in the message. If you do not use a colon, the first nonspace after the TO option is the start of the message.*

TO ODT <text>
TO ODT:<text>

Sends your message to the ODT. This command option is valid for any user at any station.

For example, the following command sends the message "WHAT?" to the ODT:

    TO ODT:WHAT?

TO ALL <text>
TO ALL:<text>

Sends your message to all stations (directed to dialog 1 of the MARC window). The TO ALL command is only valid for control-capable users or from control-capable stations.

Messages issued by the TO ALL command are sent only to the stations declared as both input and output capable in the data communications system. Messages issued by this command are not sent to output-only stations.

For example, the following command sends the message "GOOD MORNING" to all stations (directed to dialog 1 of the MARC window):

    TO ALL:GOOD MORNING

TO WINDOW <declared window name> <text>
TO WINDOW <declared window name>:<text>

Sends your message to all stations that have any dialog of a specific window open (directed to dialog 1 of the MARC window). The TO WINDOW command is only valid for control-capable users or from control-capable stations.

For example, the following command sends the message "DEPARTMENT MEETING AT 2 PM" to all stations that have the accounting window open (directed to dialog 1 of the MARC window):

    TO WINDOW ACCOUNTING:DEPARTMENT MEETING AT 2 PM

TO STATION <station list> <text>
TO STATION <station list>:<text>

Sends your message to all stations defined within a station name list or to all stations defined within a logical station number (LSN) range or list (directed to dialog 1 of the MARC window). If you list LSNs, they must be in ascending order. If more than one station or LSN is being used, the TO STATION command is only valid for control-capable users or from control-capable stations.

For example, the following command sends the message "HELLO" to the stations numbered 15 through 20 (directed to dialog 1 of the MARC window):

    TO STATION 15-20 HELLO

As another example, the following command sends the message "ARE YOU READY?"
to to the stations named E576 and E678 (directed to dialog 1 of the MARC window):

```
TO STATION E576, E678 ARE YOU READY?
```

TO <usercode> <text>
TO <usercode>:<text>

Sends your message to all stations logged on to a specific usercode (directed to dialog 1
of the MARC window). This command option is valid for any user at any station.

For example, the following command sends the message "MEETING AT 10 AM IN
CONF ROOM 8" to all stations logged on to usercode ABC (directed to dialog 1 of the
MARC window):

```
TO ABC:MEETING AT 10 AM IN CONF ROOM 8
```

Section 3
Controlling Window Dialogs

This section presents the operations for controlling window dialogs in a COMS session.

Table 3-1 lists the functions that enable you to control window dialogs in a COMS session and the names of the commands that correspond to the functions. These commands are valid for any user at any station.

Table 3-1. Controlling Window Dialogs in a COMS Session

Function	Command
Changing window dialogs	ON
Closing window dialogs	CLOSE
Sending text	PASS
Suspending messages	SUSPEND
Clearing suspension	RESUME

The names of dynamic remote-file windows are assigned by COMS. When the dynamic remote file is opened, COMS reports the name to you. In specifying the name of a dynamic remote-file window in a command, you must enter the name as follows, where $<nnnn>$ is a unique 4-digit number:

    REM<nnnn>

Changing Window Dialogs: ON Command

Use the ON command to move from one window dialog to another. Moving to a window dialog makes it your current window dialog. You can optionally send text to this window dialog through the ON command.

The ON command is valid for any user at any station, and it must be entered with a question mark (?) prefix in all windows except MARC.

You can use the ON command to move to any of your open window dialogs. When you move to another window dialog, any tanked messages for that window dialog are displayed.

A window cannot have more than eight dialogs. However, the maximum number of dialogs for a window can be less than eight. Remote-file windows can have only one dialog (dialog 1).

You can also use the ON command to move to a window dialog that is closed. It is opened as your current window dialog if you are a valid user of the window and if the user count for the window is less than the maximum of eight allowed. If you are not a valid user of the window, COMS discards any input text and displays the following message:

```
The name <window name> is not a valid WINDOW name.
```

If the user count for the window is at the maximum of eight, COMS discards any text and displays the following message:

```
The window <window name> is currently unavailable (window is full).
```

If the number of active tasks is at the maximum of 1,023, COMS discards any text and displays the following message:

```
The window <window name> is currently unavailable
(maximum number of active tasks allowed by COMS already running).
(maximum number of active tasks allowed by COMS is 1023).
```

If you enter an invalid ON command, the current window dialog is not changed.

The ON command provides you with the following capabilities:

- Moving to dialog 1 of the current window
- Moving to dialog 1 of another window
- Moving to a specific dialog of the current window
- Moving to a specific dialog of a specific window
- Moving to dialog 1 of the default window
- Moving to a specific dialog of the default window
- Entering input text with the ON command

Syntax

```
— ON ──────────────────────────────────────────────────%
        ├─<window name>─┤  └ / ─<dialog number>─┘  ├───────┬─<text>─┘
        └─ * ───────────┘                           └─ : ─┘
```

Explanation

The following examples assume the ON command is entered from the MARC window; therefore, the question mark (?) prefix is not used.

ON

Moves you to dialog 1 of the current window.

ON <window name>

Moves you to dialog 1 of another window.

For example, the following command causes dialog 1 of the accounting window to become the current window dialog:

    ON ACCOUNTING

ON/<dialog number>

Moves you to a specific dialog of the current window.

For example, the following command causes dialog 4 of the same window to become the current dialog:

    ON/4

ON <window name>/<dialog number>

Moves you to a specific dialog of a specific window.

For example, the following command causes dialog 3 of the accounting window to become the current window dialog:

    ON ACCOUNTING/3

ON *

Moves you to dialog 1 of the default window.

ON */<dialog number>

Moves you to a specific dialog of the default window.

For example, the following command causes dialog 2 of the default window to become the current window dialog:

    ON */2

<text>

All forms of the ON command enable you to send text to the window dialog to which you are moving. To send text, enter a blank space or a colon (:), followed by the text at the end of the ON command. If a colon is entered, all spaces after the colon are included in the message.

If the first word in the message is the same as the name of a window accessible to you, include a colon before the text. If the colon is not included, COMS interprets your command as a request to move to that window.

The text must be a message that can be acted upon as input in the window to which it is being sent.

For example, the following command causes dialog 3 of the accounting window to become the current window dialog (the text *DEPOSIT 100* is treated as valid input to this dialog):

```
ON ACCOUNTING/3 :DEPOSIT 100
```

Note: *If you specify both NOTIFY OPEN/ON text and optional text at the end of a ON command, COMS inputs two messages in the window that you are currently opening. If both of these messages are going to the same agenda and that agenda has TRANSACTION MODE set, COMS does not process the optional text, rejecting it with a "TRANSACTION MODE ERROR (-11)".*

Closing Window Dialogs: CLOSE Command

Use the CLOSE command to close any or all dialogs of a window or to close all dialogs of all windows, except dialog 1 of the MARC window. You can close only the dialogs that are open to you as a user.

The CLOSE command is valid for any user at any station, and it must be entered with a question mark (?) prefix in all windows except MARC.

After a window dialog is closed, any message sent to it is discarded. When the current window dialog is closed, the close action specified for the usercode or station is taken. The only exception is when the current window dialog being closed is a dynamic remote-file window that was initiated from a MARC dialog. In this case, you are assigned to the dialog of the MARC window that the dynamic remote-file was initiated from. (For details, see the *A Series COMS Configuration Guide*.)

When a station's current window is closed, you as the user can select one of the following alternatives if these actions are specified for your station and/or usercode:

- Move to specified window.

  Enables you to select a window other than MARC. If the specified window is MARC, then you are assigned to the dialog of the MARC window. If the specified window is not open, the station is placed on the MARC dialog 1 window.

- Move to previous window.

  Enables you to return to the dialog you were using prior to issuing the ?ON command. When a window is closed, there is always a previous window because MARC/1 is always an open dialog and cannot be closed. Therefore, after closing the last window that you accessed, the station returns to MARC/1.

● Move to NO_WINDOW state.

Places the station in a state where it has no current window. In this state, control commands (that is, inputs starting with the station's control character) are accepted and routed to MARC for processing. All non-control inputs are ignored by the system. When a station is switched into this state, the station's status line is not updated, so information displayed before the window closed is not altered. The response to a ?WRU command shows NO_WINDOW as the current window.

The dynamic remote-file windows initiated by MARC return to the MARC dialog. All other dynamic remote-file windows follow the close action process as described above.

When a window is closed, the station might automatically move to a window or to the NO_WINDOW state, depending on the close action setting for the station and the action that caused the close.

You cannot close dialog 1 of the MARC window. An attempt to close this dialog returns the following error message:

```
Dialog 1 of the MARC window cannot be closed.
```

If a remote-file window dialog is closed, it gets an end-of-file (EOF) indication, and any tanked messages are discarded, whether PURGE is specified or not.

The CLOSE command provides you with the following capabilities:

● Purging tanked messages for all window dialogs except a remote-file window dialog

● Closing the current window dialog

● Closing all dialogs of a specific window

● Closing a dialog of another window

● Closing all dialogs of the default window

● Closing a dialog of the default window

● Closing all dialogs of all windows

Syntax
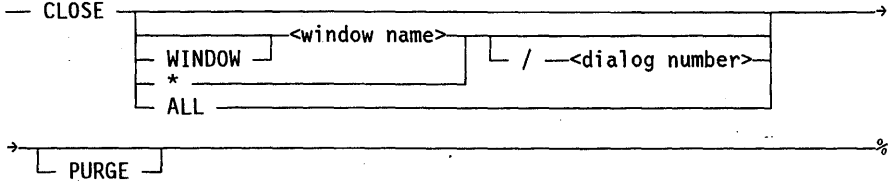
Explanation

The following examples assume the CLOSE command is entered from the MARC window; therefore, the question mark (?) prefix is not used.

CLOSE

Closes the current window dialog.

CLOSE <window name>
CLOSE WINDOW <window name>

Closes all dialogs of a specific window.

For example, the following command closes all dialogs of the accounting window:

    CLOSE WINDOW ACCOUNTING

CLOSE <window name>/<dialog number>
CLOSE WINDOW <window name>/<dialog number>

Closes one dialog of a specific window.

For example, the following command closes dialog 2 of the accounting window:

    CLOSE WINDOW ACCOUNTING/2

CLOSE *

Closes all dialogs of the default window.

CLOSE */<dialog number>

Closes one dialog of the default window.

For example, the following command closes dialog 3 of the default window:

    CLOSE */3

CLOSE ALL

Closes all dialogs of all windows. When you enter this command, all open window dialogs, including the default window dialog and the current window dialog, are closed with the exception of dialog 1 of the MARC window, which becomes the current dialog.

PURGE

Purges any tanked messages unless the window dialog is a remote-file window dialog. This option can be used with all forms of the CLOSE command.

To specify PURGE in the CLOSE command, enter *PURGE* at the end of the command.

For example, the following command discards all tanked messages for dialog 2 of the accounting window and closes the window dialog:

    CLOSE ACCOUNTING/2 PURGE

If PURGE is not specified, the tanked messages are not discarded, the window dialog is not closed, and the following error message is displayed:

```
Window <window name>/<dialog number> cannot be closed at this time.
Tanked outputs exist. Try using the RESUME command or the CLOSE command
with the PURGE option.
```

Sending Text: PASS Command

Use the PASS command to send text to another window dialog at your station. However, you remain at your current window session; using the PASS command does not move you to another window dialog at your station.

The PASS command is valid for any user at any station, and it must be entered with a question mark (?) prefix in all windows except MARC.

If you are sending text to a closed window dialog other than a closed remote-file window dialog, the closed window dialog is opened to receive the text, provided that the following conditions are met:

● You are a valid user of the window.

● The user count for the window is less than the maximum of eight allowed.

If you try to send text to a closed remote-file window dialog, the first PASS command causes the window dialog to open. However, the text is rejected because the dialog is not yet ready to receive it. If you issue the same PASS command when the dialog is open, the text is accepted.

You can transmit text to a window dialog that is suspended. In this case, the following message is returned:

```
The text has been passed to a suspended dialog.
```

The PASS command enables you to send text to the following dialogs:

● A specific dialog of the current window

● Dialog 1 of a specific window

● A specific dialog of a specific window

● Dialog 1 of the default window

● A specific dialog of the default window

If the number of tasks per user is at the maximum, COMS discards any text and displays the following message:

```
The window <window name> is currently unavailable
(maximum number of active tasks allowed by COMS already running).
```

Syntax

Explanation

<text>

The variable <text> specifies the text, or command, you are sending. The text includes any leading blanks that you enter after the optional colon (:) at the end of the PASS command.

PASS /<dialog number> <text> PASS /<dialog number> : <text>

Sends text to a specific dialog of the current window.

For example, the following command sends the text *DEPOSIT 100* to dialog 2 of the current window:

```
PASS /2 :DEPOSIT 100
```

PASS <window name> <text>
PASS <window name> : <text>

Sends text to dialog 1 of a specific window.

For example, the following command sends the text *DEPOSIT 100* to dialog 1 of the accounting window:

```
PASS ACCOUNTING DEPOSIT 100
```

PASS <window name>/<dialog number> <text>
PASS <window name>/<dialog number> : <text>

Sends text to a specific dialog of a specific window.

For example, the following command sends the text *DEPOSIT 100* to dialog 3 of the accounting window:

```
PASS ACCOUNTING/3 :DEPOSIT 100
```

PASS * <text> PASS * : <text>

Sends text to dialog 1 of the default window.

For example, the following command sends the text *DEPOSIT 100* to dialog 1 of the default window:

```
PASS * DEPOSIT 100
```

PASS */<dialog number> <text> PASS */<dialog number> : <text>

Sends text to a specific dialog of the default window.

For example, the following command sends the text *DEPOSIT 100* to dialog 4 of the default window:

```
PASS */4 DEPOSIT 100
```

Suspending Messages: SUSPEND Command

Use the SUSPEND command to suspend messages from one or more window dialogs at your station.

The SUSPEND command is valid for any user at any station, and it must be entered with a question mark (?) prefix in all windows except MARC.

When you open a window dialog at your station, the suspension of messages from this dialog is always set by default unless the RESUME ALL command option is in effect for your session. If the RESUME ALL command option is in effect, messages from a dialog are not suspended when the dialog is opened (refer to "Clearing Suspension: RESUME Command" later in this section).

When the suspension of messages from a given window dialog is set at your station, the setting remains in effect for the duration of the session unless you clear it by means of the RESUME command.

When you suspend messages from a window dialog other than your current window dialog, all messages from that dialog are tanked.

When you suspend messages from dialog 1 of the MARC window, you do not receive system messages or responses to COMS commands preceded by a question mark (?) unless MARC/1 is your current window dialog. The messages are tanked.

Moving from one window dialog to another does not change the status of the message suspension setting of either dialog.

The SUSPEND command enables you to suspend messages from the following:

- The current window dialog
- All dialogs of a specific window
- A specific dialog of a specific window
- All dialogs of the default window
- A specific dialog of the default window
- All dialogs of all windows

Syntax

```
— SUSPEND ──┬─────────────────────────┬──────────────────────%
            ├─<window name>─┐         │
            ├─ * ───────────┴─┬─ / <dialog number> ─┤
            └─ ALL ───────────┘
```
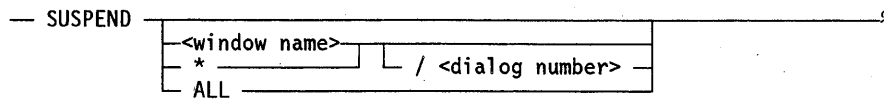
Explanation

The following examples assume the SUSPEND command is entered from the MARC window; therefore, the question mark (?) prefix is not used.

SUSPEND

Suspends messages from the current window dialog. All messages from the current window dialog at your station are always displayed; they are never tanked. When you suspend messages from your current window dialog, you continue to receive the messages from this dialog as long as it remains the current window dialog. However, the messages from this dialog are tanked after you move to another window dialog in your session.

SUSPEND <window name>

Suspends messages from all dialogs of a specific window.

For example, the following command suspends messages from all open dialogs of the accounting window:

```
SUSPEND ACCOUNTING
```

SUSPEND <window name>/<dialog number>

Suspends messages from a specific dialog of a specific window.

For example, the following command suspends messages from dialog 2 of the accounting window:

```
SUSPEND ACCOUNTING/2
```

SUSPEND *

Suspends messages from all dialogs of the default window.

SUSPEND */<dialog number>

Suspends messages from a specific dialog of the default window.

For example, the following command suspends messages from dialog 4 of the default window:

```
SUSPEND */4
```

SUSPEND ALL

Suspends messages from all dialogs of all windows, which includes the current window dialog, all dialogs of the default window, and all dialogs of the MARC window. Message suspension is set by default with respect to each window dialog that you subsequently open during the session.

You can change the suspension of messages back to unsuspended for all window dialogs by entering RESUME ALL. This command causes all messages from all window dialogs to be displayed at your current window dialog.

Clearing Suspension: RESUME Command

Use the RESUME command to clear the suspension of messages from one or more window dialogs at your station.

The RESUME command is valid for any user at any station, and it must be entered with a question mark (?) prefix in all windows except MARC.

When you clear the suspension of messages from a given window dialog, any tanked messages from the dialog are displayed as well as subsequent messages from the dialog. The display of these messages continues for the duration of your session, unless you suspend messages again with the SUSPEND command.

The RESUME command enables you to clear the suspension of messages from the following:

- The current window dialog
- A specific dialog of a specific window
- A specific dialog of the default window
- All dialogs of a specific window
- All dialogs of the default window
- All dialogs of all windows

Syntax

```
— RESUME ─┬──────────────────────────────────────────────┬─ %
          ├─<window name>─┐  ┌──────────────────┐         │
          ├─ * ───────────┘  └─ / <dialog number> ─┤      │
          └─ ALL ────────────────────────────────────────┘
```
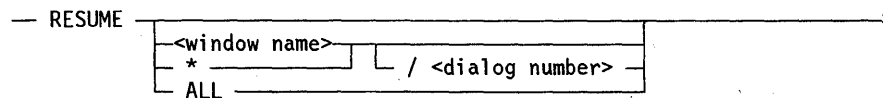
Explanation

The following examples assume the RESUME command is entered from the MARC window; therefore, the question mark (?) prefix is not used.

RESUME

Clears the suspension of messages from the current window dialog. Messages from this window dialog continue to be displayed even after you move to another window dialog.

RESUME <window name>

Clears the suspension of messages from all dialogs of a specific window.

For example, the following command displays messages from all dialogs of the accounting window:

```
RESUME ACCOUNTING
```

RESUME <window name>/<dialog number>

Clears the suspension of messages from a specific dialog of a specific window.

For example, the following command displays messages from dialog 2 of the accounting window:

```
RESUME ACCOUNTING/2
```

RESUME *

Clears the suspension of messages from all dialogs of the default window.

RESUME */<dialog number>

Clears the suspension of messages from a specific dialog of the default window.

For example, the following command displays messages from dialog 4 of the default window:

```
RESUME */4
```

RESUME ALL

Clears the suspension of messages from all dialogs of all windows. Messages are displayed from all window dialogs, including the current window dialog, all dialogs of the default window, and all dialogs of the MARC window.

The default value for each window dialog that you subsequently open during the session is unsuspended (messages are displayed for these dialogs).

You can change the message suspension setting back to suspended by using the SUSPEND ALL command. This change causes all messages from all window dialogs to be tanked, except for messages from the current window dialog.

Section 4
Controlling the COMS Network

The operations that enable you to control the COMS network are discussed in this section. The COMS network interconnects stations, lines, processors, programs, windows, databases, and processing-item libraries. Controlling the network includes such functions as adding stations to a line, making stations ready, purging tanked messages, and enabling windows.

Operations are presented for performing functions in the following categories:

- Controlling stations

- Managing tanked messages

- Managing programs, windows, databases, and processing-item libraries

Controlling Stations

Table 4-1 lists the functions that enable you to control stations in the COMS network. Each function is followed by its corresponding command.

Table 4-1. Controlling Stations in the COMS Network

Function	Command
Adding stations to a line	ADDSTA
Moving stations to a line	MOVE
Removing stations from a line	SUBTRACT
Swapping lines	SWAP
Attaching stations	ATTACH
Enabling stations	ENABLE
Disabling stations	DISABLE
Making stations ready	READY
Making stations not-ready	SAVE
Transferring a station to a remote host	CONNECT
Transferring station control	MCS and RELEASE

The first nine commands listed in Table 4-1 are valid only for control-capable users or from control-capable stations.

The CONNECT and MCS commands may be entered by any user at any station. If no station is specified in the RELEASE command (in which case, the user's station is assumed), it too may be entered by any user at any station. Otherwise, the RELEASE command is only valid for control-capable users or from control-capable stations.

The ENABLE, DISABLE, ATTACH, and (under certain conditions) READY commands are the only COMS station-control commands that are valid for stations connected to a CP 2000 communications processor. Because CP 2000 stations are controlled by the CP 2000 itself rather than by a message control system (MCS), you do not use the other COMS commands listed above to control those stations. BNA Version 2 provides the functionality of these disallowed COMS station control commands. Refer to the *BNA Version 2 Operations Reference Manual, Volumes 1 and 2: Commands and Inquiries* for details. Refer to the *A Series Security Administration Guide* for information on using the READY command with CP 2000 stations.

To communicate with COMS from a station, your station must be attached and be in the ready and enabled states.

Detailed information on station-control COMS commands is presented in the following pages.

Adding Stations to a Line: ADDSTA Command

Use the ADDSTA command to add stations to a line.

The ADDSTA command is only valid for control-capable users or from control-capable stations, and it must be entered with a question mark (?) prefix in all windows except MARC. However, this command is not valid from stations connected to a CP 2000. For information on how to add a CP 2000 station to a line, refer to the *BNA Version 2 Operations Reference Manual, Volumes 1 and 2: Commands and Inquiries*.

Syntax

```
— ADDSTA ─┬──────────┬─<station list>─┬──────┬─<DL number>───────────%
          └ STATION ─┘                └ TO ─┘
```

```
<station list>

    ┌─────── , ───────┐
──┬─┤─<station name>──┤──────────────────────────────────────────%
  │ └─────────────────┘
  │ ┌─── , ──┐
  ├─┤─<LSN>──┤──────────
  │ └────────┘
  └─<LSN>── - ──<LSN>──┘
```
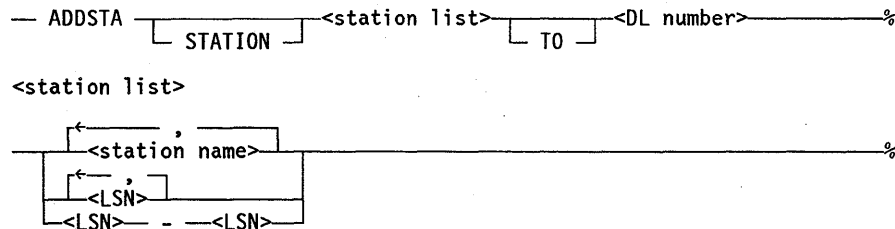
Explanation

The following examples assume the ADDSTA command is entered from the MARC window; therefore, the question mark (?) prefix is not used.

ADDSTA <station list> <DL number>
ADDSTA <station list> TO <DL number>
ADDSTA STATION <station list> <DL number>
ADDSTA STATION <station list> TO <DL number>

Adds one or more stations to a line. The variable station list specifies the stations to be added to the line named by the variable DL number.

If you list logical station numbers (LSNs), they must be in ascending order.

The variable DL number is made up of two numbers separated by a colon. The first number is the front-end processor (network support processor) number. The second number is the line number.

For example, the following command adds stations E478 and E582 to line 1:15:

```
ADDSTA E478, E582 1:15
```

Moving Stations to a Line: MOVE Command

Use the MOVE command to move stations to a line.

The MOVE command is only valid for control-capable users or from control-capable stations, and it must be entered with a question mark (?) prefix in all windows except MARC. It is not valid for stations connected to a CP 2000. For information on how to move a CP 2000 station to a line, refer to the *BNA Version 2 Operations Reference Manual, Volumes 1 and 2: Commands and Inquiries.*

Additionally, when entering the MOVE command through MARC, the word STATION is not optional — it must be included.

Syntax

```
— MOVE ───┬──────────┬──<station list>──┬──────┬──<DL number>──────────%
          └ STATION ─┘                  └ TO ─┘
```

<station list>

```
      ┌←──────── , ────────┐
 ─────┤┌←──────┐           ├──────────────────────────────────%
      ││<station name>─┘   │
      │├←──┐ ,             │
      ││<LSN>─┘            │
      └─<LSN>── - ──<LSN>──┘
```
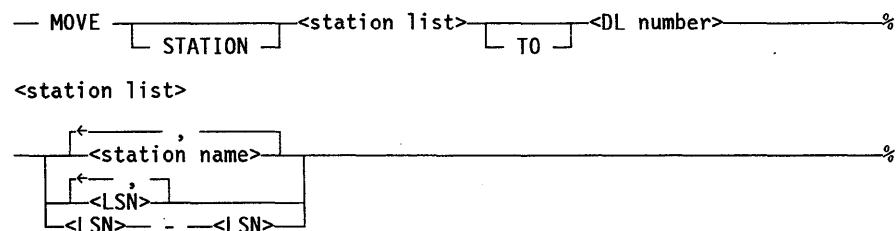
Explanation

The following examples assume the MOVE command is entered from the MARC window; therefore, the question mark (?) prefix is not used.

MOVE STATION <station list> <DL number>
MOVE STATION <station list> TO <DL number>

Moves one or more stations to a line. The variable station list indicates the stations that are to be moved to the line specified by the variable DL number.

If you list logical station numbers (LSNs), they must be in ascending order.

The variable DL number is made up of two numbers separated by a colon. The first number is the front-end processor (network support processor) number. The second number is the line number.

For example, the following command moves stations E577, E634, and E682 to line 1:22:

```
MOVE STATION E577, E634, E682 1:22
```

Removing Stations from a Line: SUBTRACT Command

Use the SUBTRACT command to remove stations from the line or lines they are on.

The SUBTRACT command is only valid for control-capable users or from control-capable stations, and it must be entered with a question mark (?) prefix in all windows except MARC. It is not valid for stations connected to a CP 2000. For information on how to remove a CP 2000 station from a line, refer to the *BNA Version 2 Operations Reference Manual, Volumes 1 and 2: Commands and Inquiries.*

Syntax

```
— SUBTRACT ┬──────────┬─<station list>───────────────────%
           └─ STATION ─┘
```

```
<station list>
```

```
        ┌←──── , ────┐
      ┌─┴─<station name>─┘
──────┤   ┌←─ , ─┐
      ├───┴─<LSN>─┘──────────────────────────────────────%
      └─<LSN>── - ──<LSN>─┘
```

Explanation

The following examples assume the SUBTRACT command is entered from the MARC window; therefore, the question mark (?) prefix is not entered.

SUBTRACT <station list>
SUBTRACT STATION <station list>

Removes one or more stations from the line or lines they are on. The variable station list lists the stations that are to be removed. The stations are removed from whatever lines they are on.

If you list logical station numbers (LSNs), they must be in ascending order.

For example, the following command removes stations E576 and E622 from the lines they are on:

```
SUBTRACT E576, E622
```

Swapping Lines: SWAP Command

Use the SWAP command to swap a line for another line (to interchange the lines).

The SWAP command is only valid for control-capable users or from control-capable stations, and it must be entered with a question mark (?) prefix in all windows except MARC. It is not valid for stations connected to a CP 2000. For information on how to interchange lines that have a CP 2000 station on one of the lines, refer to the *BNA Version 2 Operations Reference Manual, Volumes 1 and 2: Commands and Inquiries.*

Syntax

```
— SWAP ————————<DLS number>—————————<DLS number>————————————%
          └ LINE ┘              └ WITH ┘
```

Explanation

The following examples assume the SWAP command is entered from the MARC window; therefore, the question mark (?) prefix is not used.

SWAP <DLS number> <DLS number>
SWAP <DLS number> WITH <DLS number>
SWAP LINE <DLS number> <DLS number>
SWAP LINE <DLS number> WITH <DLS number>

Swaps a line for another line. When the lines are swapped, the station formerly on one line is now on the other line.

The variable DLS number is made up of three numbers separated by colons. The first number is the front-end processor (network support processor) number. The second number is the line number. It is computed by multiplying the line support processor (LSP) number by 16 and then adding the adapter number. The third number is the station number.

For example, the following command causes station 5 on line 1:35 (LSP number 2, adapter number 3) to be switched to line 1:49 (LSP number 3, adapter number 1) and station 6 on line 1:49 to be switched to line 1:35:

```
SWAP LINE 1:35:5 WITH 1:49:6
```

Attaching Stations: ATTACH Command

Use the ATTACH command to achieve COMS control of stations that are not currently attached. Attaching a station enables COMS to send messages (output) to that station. When the attached station is enabled, all input from that station is received by COMS.

The ATTACH command is only valid for control-capable users or from control-capable stations, and it must be entered with a question mark (?) prefix in all windows except MARC.

If the HOSTNAME attribute in the COMS configuration file (as defined on the COMS Utility Station screen) is different than the host name of the system, and COMS is currently linked to BNAV2, the station is assumed to be a CP 2000 station. In this case, an attach request is made to Terminal Gateway to attach this station. If the station is already attached, no action is taken.

Syntax

```
— ATTACH ———————————<station list>————————————————————%
            └— STATION —┘

<station list>

         ┌←————— , —————┐
─────────┬─┤─<station name>─┤───────────────————————————————————————%
         │ └←—— , ——┐
         ├─┤─<LSN>─┤───────────
         └─<LSN>—— - ——<LSN>—┘
```

Explanation

The following examples assume the ATTACH command is entered from the MARC window; therefore, the question mark (?) prefix is not used.

ATTACH <station list>
ATTACH STATION <station list>

Attaches one or more stations. If you list logical station numbers (LSNs), they must be in ascending order.

For example, the following command attaches station E483 to COMS:

```
ATTACH STATION E483
```

Enabling Stations: ENABLE Command

Use the ENABLE command to enable stations in the COMS network. When a station is enabled, it is polled for input if it is in the READY state. The ENABLE command can also be used to enable programs, windows, and databases (refer to "Enabling Features That Run through COMS: ENABLE Command" later in this section).

The ENABLE command is only valid for control-capable users or from control-capable stations, and it must be entered with a question mark (?) prefix in all windows except MARC.

Syntax

```
— ENABLE ———————————<station list>————————————————————%
           └— STATION —┘
```

`<station list>`

```
                  ,
        <station name>                                              %
          ,
          <LSN>
        <LSN>  -  <LSN>
```

Explanation

The following examples assume the ENABLE command is entered from the MARC window; therefore, the question mark (?) prefix is not used.

ENABLE <station list>
ENABLE STATION <station list>

Enables one or more stations in the COMS network. The variable station list indicates the stations to be enabled. If you list logical station numbers (LSNs), they must be in ascending order.

For example, the following command enables station E634:
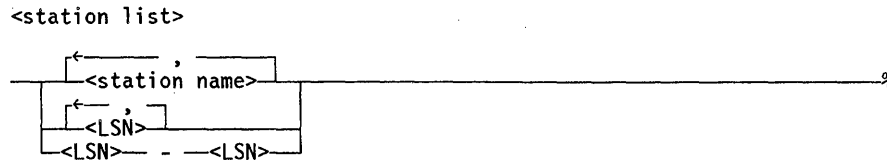
```
    ENABLE STATION E634
```

Disabling Stations: DISABLE Command

Use the DISABLE command to disable stations in the COMS network. When a station is disabled, it cannot be polled for input, but it can still receive output. The DISABLE command can also be used to disable programs, windows, databases, and processing-item libraries (refer to "Disabling Features That Run through COMS: DISABLE Command" later in this section).

The DISABLE command is only valid for control-capable users or from control-capable stations, and it must be entered with a question mark (?) prefix in all windows except MARC.

If a station is declared as a dial-in station in the Network Definition Language II (NDLII), COMS does not respond to a dial-in from the station as long as it is disabled.

Syntax

```
— DISABLE                  <station list>                          %
              STATION
```

`<station list>`

```
                  ,
        <station name>                                              %
          ,
          <LSN>
        <LSN>  -  <LSN>
```

Explanation

The following examples assume the DISABLE command is entered from the MARC
window; therefore, the question mark (?) prefix is not used.

DISABLE <station list>
DISABLE STATION <station list>

Disables one or more stations in the COMS network. The variable station list indicates
the stations to be disabled. If you list logical station numbers (LSNs), they must be in
ascending order.

For example, the following command disables station E638:
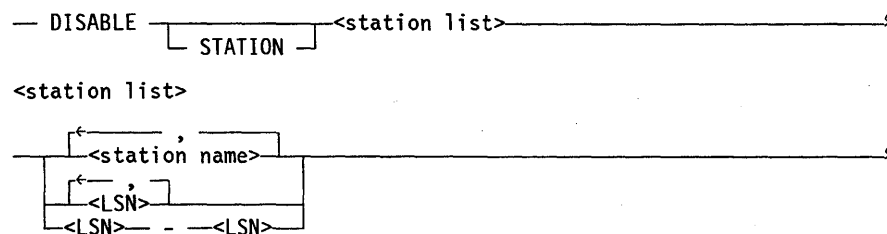
```
DISABLE STATION E638
```

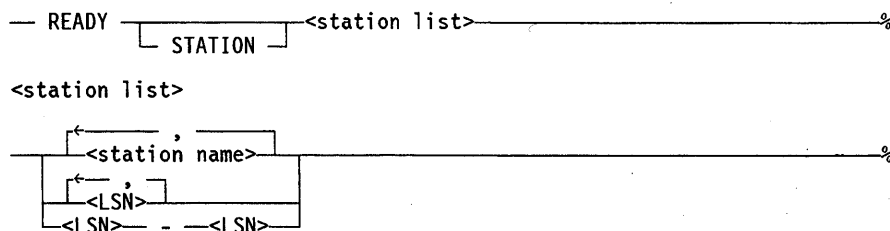## Making Stations Ready: READY Command

Use the READY command to change the status of stations from not-ready to ready.
When a station is ready, it is polled for input.

The READY command is only valid for control-capable users or from control-capable
stations, and it must be entered with a question mark (?) prefix in all windows except
MARC. Additionally, when entering this command through MARC, the word STATION
is not optional—it must be included.

The READY command is not valid for stations connected to a CP 2000. For information
on how to ready a CP 2000 station, refer to the *BNA Version 2 Operations Reference
Manual, Volumes 1 and 2: Commands and Inquiries*. For information on when
the READY command is valid for CP 2000 stations, refer to the *A Series Security
Administration Guide*.

If the system goes down and comes up again, COMS does not retain the READY status
of the station.

Syntax

```
— READY ──┬───────────┬──<station list>──────────────────%
           └─ STATION ─┘

<station list>

     ┌←─────── , ───────┐
   ──┼──<station name>──┤──────────────────────────────────%
     │ ┌←── , ──┐       │
     ├─┴─<LSN>──┘       │
     └─<LSN>── - ──<LSN>─┘
```

Explanation

The following example assumes the READY command is entered from the MARC
window; therefore, the question mark (?) prefix is not used.

READY STATION <station list>

Makes one or more stations ready. The variable station list specifies the stations to be set to ready. If you list logical station numbers (LSNs), they must be in ascending order.

For example, the following command makes station E638 ready:

```
READY STATION E638
```
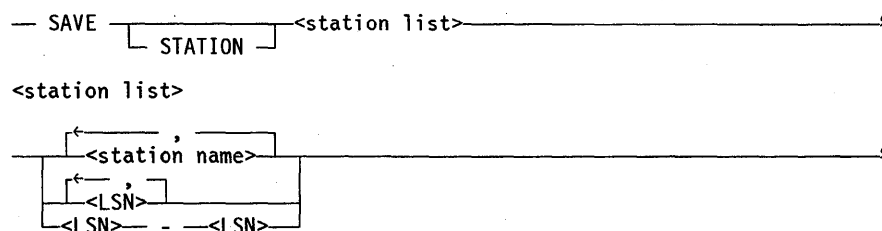
Making Stations Not-Ready: SAVE Command

Use the SAVE command to change the status of stations from ready to not-ready. When a station is not-ready, it cannot be polled for input, and it cannot receive messages.

The SAVE command is only valid for control-capable users or from control-capable stations, and it must be entered with a question mark (?) prefix in all windows except MARC. And, when entering this command through MARC, the word STATION is not optional — it must be included.

The SAVE command is not valid for stations connected to a CP 2000. For information on how to make a CP 2000 station not-ready, refer to the *BNA Version 2 Operations Reference Manual, Volumes 1 and 2: Commands and Inquiries.*

If the system goes down and comes up again, COMS does not retain the not-ready status of the station.

Syntax

```
— SAVE ┬────────────┬─<station list>─────────────────────────%
        └─ STATION ─┘

<station list>

    ┌──────, ──────┐
  ──┤  ┌─<station name>─┘──────────────────────────────────%
    │  ┌── , ─┐
    ├──┤─<LSN>─┘──────┤
    └─<LSN>── - ──<LSN>─┘
```

Explanation

The following example assumes the SAVE command is entered from the MARC window; therefore, the question mark (?) prefix is not used.

SAVE STATION <station list>

Makes one or more stations not-ready. The variable station list lists the stations to be changed to the not-ready status. If you list logical station numbers (LSNs), they must be in ascending order.

For example, the following command makes station E648 not-ready:

```
SAVE STATION E648
```

Transferring a Station to a Remote Host: CONNECT Command

Use the CONNECT command to transfer your station to a remote host system through BNA station transfer. A remote host system contains the message control system (MCS) to which a given station is connected after transfer from the local system.

The CONNECT command is valid for any user at any station, and it must be entered with a question mark (?) prefix in all windows except MARC.

If you have transferred your station to a remote host system, you can transfer the station back to the normal (local) host system for the station by using the BYE command. The BYE command ends your session and causes the transfer.

The CONNECT command enables you to transfer with a connection to the default MCS for the remote system or to transfer with a connection to a specific MCS.

Syntax

```
— CONNECT TO —<host name>                                              —%
                      └— : —<MCS name>—┘

<host name>

     ┌— <BNA hostname> —┐                                              —%
  ———┼— <IP address> ———┤
     └— <domain name> ——┘
```

Explanation

The following examples assume the CONNECT command is entered from the MARC window; therefore, the question mark (?) prefix is not used.

CONNECT TO <BNA hostname>

Transfers your station to a remote host system and connects the station to the default MCS for that system. If the host name specified in the CONNECT command does not exist, an error message is displayed and control of the station is retained by COMS.

For example, the following command transfers the station to the D59B remote host system and connects the station to the default MCS for that system:

```
CONNECT TO D59B
```

CONNECT TO <BNA hostname> : <MCS name>

Transfers your station to a remote host system and connects the station to a specific MCS on that system.

For example, the following command transfers the station to the D59B remote host system and connects the station to Command and Edit (CANDE) on that system:

```
CONNECT TO D59B : CANDE
```

If you try to transfer your station to a remote system that you cannot log on to, use the CLOSE command to return to the system from which you issued the CONNECT command. Be sure to use the proper number of question marks with the CLOSE command to direct the command to the proper copy of COMS. The proper copy is the one on the system preceding the targeted system you specified with the CONNECT command. You might also have other MCSs, such as CANDE, within the chain of connections. Refer to Section 1, "Overview," for a description of how to use question marks with commands.

Transferring Station Control: MCS and RELEASE Commands

Use either the MCS or the RELEASE command to transfer control of your station to another MCS. Use the RELEASE command to transfer control of stations other than your own to another MCS. These two commands must be entered with a question mark (?) prefix in all windows except MARC.

The MCS command is valid for any user at any station. The usage restrictions of the RELEASE command vary according to syntax option. Refer to the explanation that follows the command syntax. However, the MCS and RELEASE commands are not valid for a station connected to a CP 2000. For information on how to transfer control of a CP 2000 station to another MCS, refer to the *BNA Version 2 Operations Reference Manual, Volumes 1 and 2: Commands and Inquiries.*

When you enter the MCS command or the RELEASE command, the following events happen:

- The users at the affected stations are logged off from COMS.

- All the window dialogs open for these users are closed.

- Control of the affected stations is transferred to the specified MCS.

When you are using either an MCS command or a RELEASE command, the transfer of control of a pertinent station to another MCS is not accomplished if any messages from any windows are tanked for that station. If you are using the RELEASE command, transferring control of the other pertinent stations is accomplished if those stations have no tanked messages.
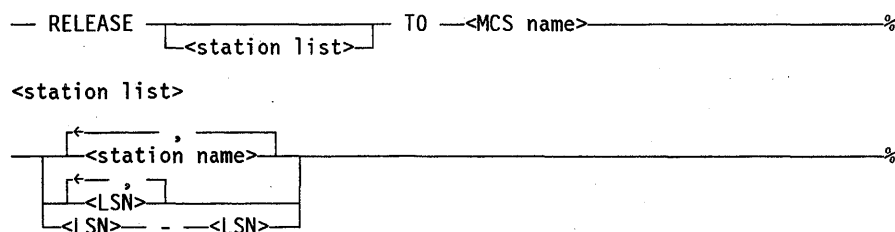
The MCS command enables you to transfer control of only your station to another MCS. Whereas, the RELEASE command enables you to transfer control of your station or other stations to another MCS.

MCS Command Syntax

— MCS —<MCS name>————————————————————————%

RELEASE Command Syntax

```
— RELEASE ─┬─────────────────┬─ TO ──<MCS name>──────────────────%
           └─<station list>──┘

<station list>

      ┌─────── , ───────┐
  ─┬──┴──<station name>──┴──────────────────────────────────────%
   │  ┌── , ──┐
   ├──┴─<LSN>─┘
   └─<LSN>── - ──<LSN>──┘
```

Explanation

The following examples assume the MCS or RELEASE command is entered from the MARC window; therefore, the question mark (?) prefix is not used.

MCS <MCS name>

Transfers control of your station to another MCS. The MCS name that you specify must be an NDLII-declared MCS name. The MCS command is valid for any user at any station.

For example, the following command causes you to be logged off from COMS, closes all your window dialogs, and transfers the control of your station to the MCS titled CANDE:

```
MCS CANDE
```

RELEASE TO <MCS name>

Transfers control of your station to another MCS. The MCS name that you specify must be an NDLII-declared MCS name. This form of the RELEASE command is valid for any user at any station. For example, the following command causes you to be logged off from COMS, closes all your window dialogs, and transfers the control of your station to the MCS titled CANDE:

```
RELEASE TO CANDE
```

RELEASE <station list> TO <MCS name>

Transfers control of one or more stations to another MCS. The MCS name that you specify must be an NDLII-declared name. This form of the RELEASE command is only valid for control-capable users or from control-capable stations. If you list logical station numbers (LSNs), they must be in ascending order.

For example, the following command causes the users at stations E533 and E536 to be logged off from COMS, all window dialogs open for these users to be closed, and control of stations E533 and E536 to be transferred to the MCS titled CANDE:

```
RELEASE E533, E536 TO CANDE
```

Managing Tanked Messages

You can use the COMS functions as listed in Table 4–2 to manage messages tanked for a station. Each function is followed by the name of its corresponding command.

Table 4–2. Managing Messages

Function	Command
Retrieving and sending tanked messages	RECALL
Purging tanked messages	PURGE

The RECALL command is only valid for control-capable users or from control-capable stations. However, it is not valid from stations connected to a CP 2000. For information on how to retrieve and deliver tanked messages for a station connected to a CP 2000, refer to the *BNA Version 2 Operations Reference Manual, Volume 1*.

Instructions for performing these functions are presented on the pages that follow.

Retrieving and Sending Tanked Messages: RECALL Command

Use the RECALL command to cause all messages tanked in COMS for one station to be retrieved and delivered to another station.

The RECALL command is only valid for control-capable users or from control-capable stations, and it must be entered with a question mark (?) prefix in all windows except MARC.

Syntax

```
— RECALL ——<station name>————————<station name>———————%
           └<LSN>——————┘ └ TO ┘ └<LSN>————┘
```

Explanation

The following examples assume the RECALL command is entered from the MARC window; therefore, the question mark (?) prefix is not entered.

RECALL <station name> <station name>
RECALL <station name> <LSN>
RECALL <LSN> <LSN>
RECALL <LSN> <station name>
RECALL <station name> TO <station name>
RECALL <station name> TO <LSN>
RECALL <LSN> TO <LSN>
RECALL <LSN> TO <station name>

Causes all messages tanked for a station to be retrieved and delivered to another station. The first occurrence of either a station name or a logical station number (LSN) specifies the station for which the messages are tanked. These messages are sent to the station named by the second occurrence of either a station name or a LSN.

For example, the following command retrieves all tanked messages for station E536 and delivers them to station E540 in dialog 1 of the MARC window:

    RECALL E536 E540

For information about using the RECALL command to retrieve protected output messages, see Section 6, "Initialization, Shutdown, Backup, and Recovery."
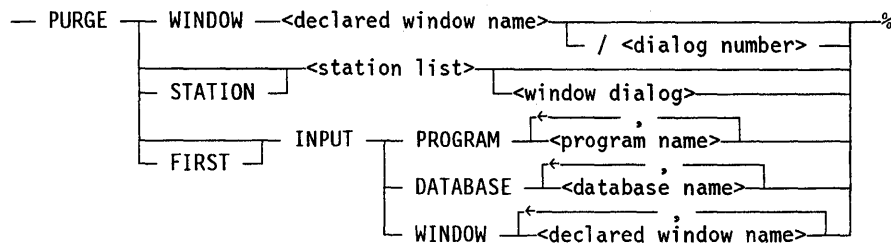
Purging Tanked Messages: PURGE Command

Use the PURGE command to eliminate (purge) all output messages tanked for a station in a window dialog. You can also purge input messages for a specific program, database, or window.

The PURGE command is valid for any user at any station, and it must be entered with a question mark (?) prefix in all windows except MARC.
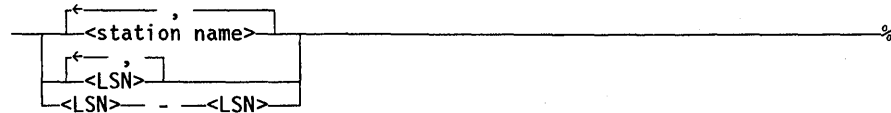
The PURGE command provides you with capabilities for purging the following kinds of messages:

- Tanked messages for a station or stations

- Tanked messages for a logical station number (LSN) or series of LSNs

- Input messages for a specific program

- Input messages for a specific database
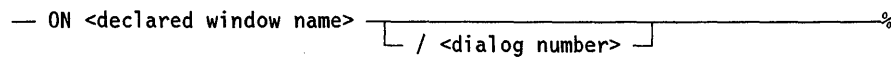
- Input messages for a specific window

Syntax

```
— PURGE ┬─ WINDOW ──<declared window name>┬──────────────────────────┬──%
        │                      ┌<station list>┐  └ / <dialog number> ─┘
        ├─ STATION ─┘                        └<window dialog>──────────┘
        │                                   ┌←──────  ,  ──────┐
        └─ FIRST ─┘──INPUT ┬─ PROGRAM ──┴─<program name>─┴────────────
                           │               ┌←──────  ,  ──────┐
                           ├─ DATABASE ──┴─<database name>─┴──────────
                           │              ┌←──────  ,  ──────┐
                           └─ WINDOW ──┴─<declared window name>─┴──┘
```

<station list>

```
        ┌←──────  ,  ──────┐
────┬──┴─<station name>─┴──────────────────────────────────────────────%
    │  ┌←── , ──┐
    ├──┴─<LSN>─┴──────┘
    └─<LSN>── - ──<LSN>─┘
```

<window dialog>

```
— ON <declared window name> ─┬──────────────────────┬──%
                             └ / <dialog number> ─┘
```

Explanation

The following examples assume the PURGE command is entered from the MARC window; therefore, the question mark (?) prefix is not used.

PURGE WINDOW <declared window name>

Purges all messages tanked for your station in dialog 1 of a specific window. This form of the command is valid for any user at any station. All messages tanked for your station are eliminated.

For example, the following command purges all messages tanked for your station in dialog 1 of the accounting window:

```
PURGE WINDOW ACCOUNTING
```

PURGE WINDOW <declared window name>/<dialog number>

Purges all messages tanked for your station in a specific window dialog. This form of the command is valid for any user at any station. All messages tanked for your station in the designated window dialog are eliminated.

For example, the following command purges all messages tanked for your station in dialog 2 of the accounting window:

```
PURGE WINDOW ACCOUNTING/2
```

PURGE <station list>
PURGE STATION <station list>

Purges the current window dialog of the specified station or stations. If you list logical station numbers (LSNs), they must be in ascending order.

For example, the following command purges the current window dialog for station E418:

    PURGE STATION E418

PURGE <station list> ON <declared window name>
PURGE STATION <station list> ON <declared window name>

Purges all messages tanked for stations or logical station numbers (LSNs) in dialog 1 of a specific window. This form of the PURGE command is only valid for for control-capable users or from control-capable stations. If you list LSNs, they must be in ascending order.

For example, the following command purges all messages tanked for station E418 in dialog 1 of the accounting window:

    PURGE STATION E418 ON ACCOUNTING

PURGE <station list> ON <declared window name>/<dialog number>
PURGE STATION <station list> ON <declared window name>/<dialog number>

Purges all messages tanked for stations or logical station numbers (LSNs) in a specific window dialog. This form of the PURGE command is only valid for control-capable users or from control-capable stations. If you list LSNs, they must be in ascending order.

For example, the following command purges all messages tanked for station E418 in dialog 3 of the accounting window:

    PURGE STATION E418 ON ACCOUNTING/3

PURGE INPUT PROGRAM <program name>
PURGE FIRST INPUT PROGRAM <program name>

Purges all input messages for a specific program. When you use the FIRST option, you purge only the first message input for a specific program.

For example, the following command purges all input messages for program ABC:

    PURGE INPUT PROGRAM ABC

PURGE INPUT DATABASE <database name>
PURGE FIRST INPUT DATABASE <database name>

Purges all input messages for a specific database. When you use the FIRST option, you purge only the first input message for a specific database.

For example, the following command purges all input messages for database CDE:

```
PURGE INPUT DATABASE CDE
```

PURGE INPUT WINDOW <declared window name>
PURGE FIRST INPUT WINDOW <declared window name>

Purges all input messages for a specific window name. When you use the FIRST option, you purge only the first input message for the specific window name.

For example, the following command purges all input messages for the accounting window:

```
PURGE INPUT WINDOW ACCOUNTING
```

Managing Programs, Windows, Databases, and Processing-Item Libraries

You can use the functions listed in Table 4–3 to manage programs, windows, databases, and processing-item libraries in the COMS network. Each function is followed by the name of its corresponding command.

Table 4–3. Managing Programs, Windows, Databases, and Processing-Item Libraries

Function	Command
Enabling features that run through COMS	ENABLE
Disabling features that run through COMS	DISABLE

The ENABLE and DISABLE commands are only valid for control-capable users or from control-capable stations.

When COMS is brought up for the first time, all its programs, windows, and databases are automatically enabled. If any COMS program, window, or database is disabled, you must use the ENABLE command to enable that particular entity to operate again.

If a program goes into a loop, you can disable it until the program is fixed. Then you can enable the program to use it again. Likewise, you can disable a window to repair a program that resides there. You can enable that window when you are ready to use the program again. Processing-item libraries can be disabled if they need to be altered, but you do not enable a library by command, because the next call to the library establishes a new instance of that library.

Enabling Features That Run through COMS: ENABLE Command

Use the ENABLE command to enable programs, windows, and databases in COMS. You can also use the ENABLE command to enable stations (refer to "Enabling Stations: ENABLE Command" earlier in this section). The ENABLE command is only valid for control-capable users or from control-capable stations, and it must be entered with a question mark (?) prefix in all windows except MARC.

Syntax

```
— ENABLE ——┬— PROGRAM —<program name>————————————┬—————————————————————%
           ├— WINDOW —<declared window name>—┤
           └— DB —<database name>——————————┘
```

Explanation

The following examples assume the ENABLE command is entered from the MARC window; therefore, the question mark (?) prefix is not used.

ENABLE PROGRAM <program name>

Enables input to be routed to the specific program.

For example, the following command enables program XYZ, and input can now be routed to this program:

```
ENABLE PROGRAM XYZ
```

ENABLE WINDOW <declared window name>

Enables you to access dialogs of the specific window by using the ON command.

For example, the following command enables the accounting window, and you can now access dialogs of this window:

```
ENABLE WINDOW ACCOUNTING
```

ENABLE DB <database name>

Enables the specific database as well as all programs declared through the COMS Utility that use the database.

For example, the following command enables the ACCOUNTDB database, and all programs declared to use this database are enabled:

```
ENABLE DB ACCOUNTDB
```

Disabling Features That Run through COMS: DISABLE Command

Use the DISABLE command to disable programs, windows, databases, and processing-item libraries in COMS. You can also use the DISABLE command to disable stations (refer to "Disabling Stations: DISABLE Command" earlier in this section).

The DISABLE command is only valid for control-capable users or from control-capable stations, and it must be entered with a question mark (?) prefix in all windows except MARC.

When a program is disabled, it is instructed to terminate. When the disabled program terminates, it cannot run until it is enabled. A disabled program cannot receive and process input. If a remote-file program in the window is disabled, the window closes and all stations for the current window perform the close action specified for the usercode or station. (For details, see the *A Series COMS Configuration Guide*.) For direct windows, the disabling of a program means the program is unavailable to process transactions, but the window is still available.

Disabling a window terminates all programs in the window. As long as the window is disabled, the programs cannot be accessed. The window closes and all stations for the current window perform the close action specified for the usercode or station. (For details, see the *A Series COMS Configuration Guide*.) Unless message suspension is in effect for dialog 1 of the MARC window at an affected station, a message stating that the window has been disabled is displayed at the station. The MARC window cannot be disabled. The other windows can be disabled either immediately or after queued input for all programs in the window is processed.

Information that has been sent to a suspended window is placed on a different window, based on the close action specified for the window in the configuration file. Refer to the *A Series COMS Configuration Guide* for information on specifying close actions for windows.

Disabling a database terminates all programs declared through the COMS Utility to use the database. When the programs terminate, the database is disabled. As long as the database is disabled, the programs cannot be accessed through the database.

Syntax

```
— DISABLE ─┬───────────┬─┬─ PROGRAM ──<program name>────────┬────────────%
           ├─ NOW ─┘   ├─ WINDOW ──<declared window name>─┤
           │           └─ DB ──<database name>────────────┤
           └─ LIBRARY ──<PI library name>─────────────────┘
```

Explanation

The following examples assume the DISABLE command is entered from the MARC window; therefore, the question mark (?) prefix is not used.

DISABLE NOW PROGRAM <program name>

Disables a program immediately. Any subsequent input is queued and waits for the program to be enabled. If the program is disabled, and you want to purge the queued input, use the PURGE command with the INPUT option as described in this guide.

For example, the following command disables program XYZ immediately:

```
DISABLE NOW PROGRAM XYZ
```

DISABLE PROGRAM <program name>

Causes a program to be disabled after all its queued input is processed.

For example, the following command disables program XYZ after all its queued input is processed:

```
DISABLE PROGRAM XYZ
```

DISABLE NOW WINDOW <declared window name>

Disables a window immediately and discards its queued input.

For example, the following command disables the accounting window immediately and discards all queued input for the terminated programs:

```
DISABLE NOW WINDOW ACCOUNTING
```

DISABLE WINDOW <declared window name>

Causes a window to be disabled after all queued input is processed for all programs in the window.

For example, the following command disables the accounting window after all queued input is processed for all programs in the window:

```
DISABLE WINDOW ACCOUNTING
```

DISABLE NOW DB <database name>

Disables a database immediately and discards all queued input.

For example, the following command disables the ACCOUNTDB database immediately and discards all queued input for the terminated programs:

```
DISABLE NOW DB ACCOUNTDB
```

DISABLE DB <database name>

Disables a database after all queued input is processed for all programs declared to use this database.

For example, the following command disables the ACCOUNTDB database after all queued input is processed for all programs declared to use this database:

```
DISABLE DB ACCOUNTDB
```

DISABLE LIBRARY <PI library name>

Disables a processing-item library until the next time it is called by a program. A processing-item library is a program that contains a set of procedures known as entry points that can be called by other programs. When a library is disabled, the library declaration associated with the specified library name is canceled. The LIBRARY option enables you to use new versions of processing-item libraries without bringing down COMS.

Caution

Do not use the DS (DiScontinue) system command to disable a processing-item library — it will terminate COMS. Always use the appropriate DISABLE LIBRARY or DISABLE NOW command to disable a library without terminating COMS.

A disabled processing-item library is reenabled the next time a program calls the library.

For example, the following command cancels the library declaration associated with the processing-item library name AGENDAENTRIES1:

```
DISABLE LIBRARY AGENDAENTRIES1
```

Section 5
Controlling Transaction Trails

This section describes the functions you can use to control transaction trails. The functions are listed in Table 5-1. The COMS and DATABASE commands are valid only for control-capable users or from control-capable stations.

Table 5-1. Controlling Transaction Trails

Control Function	Implemented By
COMS transaction trails (for non-database programs)	COMS command
Database transaction trails (for database programs)	DATABASE command
Automatic backup and removal	WFL job

COMS Transaction Trails: Using the COMS Command

A COMS transaction trail, as opposed to a database transaction trail, is a file generated by COMS that contains information such as the beginning-of-job (BOJ) and end-of-job (EOJ) records of programs that are initiated by COMS. The file optionally provides a journal of query transactions not associated with any database. The file also optionally provides statistical information, on a transaction-by-transaction basis, that can be used for security and accounting.

Use the COMS command for any of the following tasks:

- Controlling the kind of information to be written to a COMS transaction trail

- Closing the current COMS transaction trail and opening a new one

- Inquiring about the current COMS transaction trail settings and the file number of the current trail

The COMS command is only valid for control-capable users or from control-capable stations, and it must be entered with a question mark (?) prefix in all windows except MARC.

The following kinds of information can be written to a COMS transaction trail if you request them to be captured:

- Statistics, such as central processor unit (CPU) time and total transit time for a transaction (direct-window programs only)

- Audit trail of transactions not associated with any database

If neither kind of information is requested, the COMS transaction trail simply audits BOJs and EOJs for jobs that are initiated by COMS.

Syntax

```
— COMS ─────┬─ STATISTICS ──┬─┬─ ON ──┬────────────────────%
            ├─ AUDIT ───────┘ └─ OFF ─┤
            └─ TRAIL CLOSE ───────────┘
```

Explanation

The following examples assume the COMS command is entered from the MARC window; therefore, the question mark (?) prefix is not used.

COMS

Inquires about the current COMS transaction trail settings and the file number of the current trail. COMS responds by indicating that the STATISTICS and AUDIT options are either turned ON or OFF.

An example of the system response to the COMS command is as follows:

```
Statistics OFF, Audit OFF, Transaction Trail file is number 14.
```

COMS STATISTICS ON

Specifies that statistics be written to a COMS transaction trail. This setting remains in effect until it is modified with a COMS STATISTICS OFF command, or until COMS goes to EOJ. To make the setting permanent, use the Database screen of the COMS Utility, specifying TPLIBRARY as the database name.

COMS STATISTICS OFF

Specifies that statistics not be written to a COMS transaction trail. This setting remains in effect until it is modified with a COMS STATISTICS ON command, or until COMS goes to EOJ. To make the setting permanent, use the Database screen of the COMS Utility, specifying TPLIBRARY as the database name.

COMS AUDIT ON

Specifies that transactions not associated with a database be written to a COMS transaction trail. This setting remains in effect until it is modified with a COMS AUDIT OFF command, or until COMS goes to EOJ. To make the setting permanent, use the Database screen of the COMS Utility, specifying TPLIBRARY as the database name.

COMS AUDIT OFF

Specifies that transactions not associated with a database not be written to a COMS transaction trail. This setting remains in effect until it is modified with a COMS AUDIT ON command, or until COMS goes to EOJ. To make the setting permanent, use the Database screen of the COMS Utility, specifying TPLIBRARY as the database name.

COMS TRAIL CLOSE

Closes the current COMS transaction trail and opens a new one.

Database Transaction Trails: Using the DATABASE Command

A database transaction trail is a file, generated by a database (DB) library, that contains a series of time-ordered transactions that can be reapplied to the database. The purpose for reapplying the transactions is to provide synchronized recovery of the database in the event of a transaction state termination, system crash, or rollback. The file optionally provides a journal of query transactions associated with the database. The file also optionally provides statistical information on a transaction-by-transaction basis and can be used for security and accounting. There is a database transaction trail for each database that is defined to COMS.

Use the DATABASE command for any of the following tasks:

● Controlling the kinds of information to be written to the transaction trail of a given database

● Closing the current transaction trail of a given database and opening a new one

● Inquiring about the current transaction trail settings of a given database and the file number of the current trail of the database

The DATABASE command is only valid for control-capable users or from control-capable stations, and it must be entered with a question mark (?) prefix in all windows except MARC.

The following kinds of information can be written to the transaction trail of a given database if you request them to be captured. Otherwise, this information is not written to the transaction trail of the database:

● Statistics, such as CPU time and total transit time for transactions associated with a given database

● Audit trails of all transactions processed by programs associated with a given database

If you do not request that all transactions be captured, only transactions that update the database are written to the transaction trail of the given database.

Syntax

```
— DATABASE —<database name>                                              %
                      ├─ STATISTICS ─┬─┬─ ON ─┤
                      ├─ AUDIT ───────┘ └─ OFF ─┤
                      └─ TRAIL CLOSE ───────────┘
```

Explanation

The following examples assume the DATABASE command is entered from the MARC window; therefore, the question mark (?) prefix is not used.

DATABASE <database name>

Inquires about the current transaction trail settings and the file number of the current trail of a given database. The system responds by indicating that the STATISTICS and AUDIT options are either turned ON or OFF.

The following is an example of a system response to an inquiry:

```
Statistics OFF, Audit OFF, Transaction Trail file is number 12.
```

DATABASE <database name> STATISTICS ON

Requests that statistics be written to the transaction trail of a given database. This setting remains in effect until it is modified with a DATABASE <database name> STATISTICS OFF command, or until COMS goes to EOJ. To make the setting permanent, use the Database screen of the COMS Utility.

For example, the following command requests that statistics be written to the transaction trail of the ACCOUNTDB database until the setting is modified:

```
DATABASE ACCOUNTDB STATISTICS ON
```

DATABASE <database name> STATISTICS OFF

Requests that statistics not be written to the transaction trail of a given database. This setting remains in effect until it is modified with a DATABASE <database name> STATISTICS ON command, or until COMS goes to EOJ. To make the setting permanent, use the Database screen of the COMS Utility.

For example, the following command requests that statistics not be written to the transaction trail of the ACCOUNTDB database until the setting is modified:

    DATABASE ACCOUNTDB STATISTICS OFF

DATABASE <database name> AUDIT ON

Requests that all transactions processed by programs associated with a given database be written to the transaction trail of the database. This setting remains in effect until it is modified with a DATABASE <database name> AUDIT OFF command, or until COMS goes to EOJ. To make the setting permanent, use the Database screen of the COMS Utility.

For example, the following command requests that all transactions processed by programs associated with the ACCOUNTDB database be written to the transaction trail of the database until the setting is modified:

    DATABASE ACCOUNTDB AUDIT ON

DATABASE <database name> AUDIT OFF

Specifies that only update transactions processed by programs associated with a given database be written to the transaction trail of the database. This setting remains in effect until it is modified with a DATABASE <database name> AUDIT ON command, or until COMS goes to EOJ. To make the setting permanent, use the Database screen of the COMS Utility.

For example, the following command requests that only update transactions processed by programs associated with the ACCOUNTDB database be written to the transaction trail of the database:

    DATABASE ACCOUNTDB AUDIT OFF

DATABASE <database name> TRAIL CLOSE

Closes the current transaction trail for a given database and opens a new one for the database.

For example, the following command closes the current transaction trail and opens a new one for the ACCOUNTDB database:

    DATABASE ACCOUNTDB TRAIL CLOSE

Implementing Automatic Backup and Removal

If you want to automatically back up and remove either a COMS transaction trail or a database transaction trail whenever COMS switches transaction trails, you must first create a WFL job to perform the actual backup and removal procedure. Then, you must assign the title of the backup/removal job file to the database using the COMS Utility program as described in the *COMS Configuration Guide*.

Note: To back up a COMS transaction trail, you must specify TPLIBRARY as the database name.

To implement this feature, your backup/removal job file must provide the following parameters:

Parameter	Description
TTFILENAME	The actual file name of the transaction trail to be backed up and removed from disk.
TTPACKNAME	The family or pack name where the transaction trail file resides.
DBLIBNAME	The name of the database, as defined in the COMS configuration file. The database name is used as the tape label in the resulting copy-to-tape operation.
TTFILENUMBER	The number of the transaction trail that is to be backed up and removed.

Example

The following, for example, would be a suitable backup and removal job:

```
BEGIN JOB TTRAILBACKUP (STRING TTFILENAME,
                        STRING TTPACKNAME,
                        STRING DBLIBNAME,
                        STRING TTFILENUMBER);
TASK T;
COPY #TTFILENAME FROM #TTPACKNAME (PACK)
                 TO #DBLIBNAME (TAPE, SERIALNO = "BACKUP") [T];
IF T IS COMPLETEDOK AND
   T(VALUE) NEQ 1 THEN
       REMOVE #TTFILENAME FROM #TTPACKNAME;

END JOB.
```

Section 6
Initialization, Shutdown, Backup, and Recovery

This section provides you with instructions for initializing COMS and for shutting down the COMS network.

Guidelines and example instructions for performing COMS-related backup are also given.

This section also considers exceptional situations in which operator action is needed to recover any of the following:

- A database in a COMS network/Data Management System II (DMSII) database environment

- A database in a COMS network/Semantic Information Manager (SIM) database environment

- A COMS configuration file

- Protected output messages

Three of the most likely situations that can require operator action to recover a database are addressed.

Initializing COMS

Instructions for initializing COMS are presented in the paragraphs that follow. These instructions apply to situations in which COMS is not initialized automatically by the system. For example, COMS might need to be initialized after the COMS network has been shut down with the QUIT command.

COMS can be initialized in either of the following two ways:

1. You can initialize COMS from the system ODT by issuing the following command:

        ??RUN SYSTEM/COMS

2. You can initialize COMS from a Work Flow Language (WFL) job deck by using the PROCESS RUN statement. You must use the PROCESS RUN statement from WFL; if you do not, COMS cannot freeze and will terminate with the following message:

        COMS Cannot Freeze, Task Type not PROCESS or RUN

The following example shows how to initiate COMS from a WFL job deck:

```
BEGIN JOB COMS;
PROCESS RUN *SYSTEM/COMS;
    OPTION=(FAULT, ARRAYS, LIBRARIES, DSED);
    FILE TANK (KIND=DISK, TITLE=COMS/TANK ON TANKPACK);
    PRIORITY=9Ø;
END JOB.
```

COMS requires the CENTRALSUPPORT library during initialization. This CENTRAL SUPPORT library is required with a Mark 3.9 MCP or higher version. However, if you are running a Mark 3.8 MCP and the CENTRALSUPPORT library is not available, the following message is displayed for information purposes only:

```
UNABLE TO LINK TO CENTRALSUPPORT
```

If you have a CP 2000, you must use the SL (Support Library) command to link the Protocol-Specific Handler/Terminal Transport Protocol (PSH/TTP) to COMSTTPSUPPORT before you initialize COMS.

Shutting Down the COMS Network: QUIT Command

Use the QUIT command to shut down the COMS network. Any station that transferred into COMS from another message control system (MCS) is returned to the controlling MCS that is defined in the the DATACOMINFO file. As a result of the QUIT command, COMS goes to end-of-job (EOJ). The QUIT command is only valid for control-capable users or from control-capable stations.

The QUIT command provides you with the following capabilities:

- Shutting down the COMS network after pending messages are processed
- Dumping COMS and shutting down the COMS network immediately
- Shutting down the COMS network immediately

Syntax

```
— QUIT — COMS ─────────────────────────────────%
              ├─ DUMP ─┤
              └─ NOW ──┘
```

Explanation

The following examples assume the QUIT command is entered from the MARC window; therefore, the question mark (?) prefix is not used.

QUIT COMS

Shuts down the COMS network after pending messages are processed.

QUIT COMS DUMP

Takes a system dump of COMS and shuts down the COMS network immediately.
Messages are handled as follows:

- Messages that have not been delivered to programs are not delivered.

- Messages in protected input queues are recovered through normal COMS recovery
  procedures when COMS is reinitialized.

- Transactions in process by programs are not completed.

- All COMS programs are terminated. When COMS is reinitialized, normal COMS
  recovery takes place, including input-protected messages that were in process when
  the program was terminated.

QUIT COMS NOW

Shuts down the COMS network immediately. Messages are handled as follows:

- Messages that have not been delivered to programs are not delivered.

- Messages in protected input queues are recovered through normal COMS recovery
  procedures when COMS is reinitialized.

- Transactions in process by programs are not completed.

- All COMS programs are terminated. When COMS is reinitialized, normal COMS
  recovery takes place, including input-protected messages that were in process when
  the program was terminated.

Backup Guidelines and Procedures

Guidelines for backing up information associated with a COMS network/DMSII or SIM
database environment are presented in the paragraphs that follow.

SIM is implemented by using a DMSII database. All backup and recovery procedures
for SIM databases use the same techniques as those for DMSII databases. In fact, the
software utilities for backing up and recovering SIM and DMSII are the same.

Backup guidelines are presented for the following kinds of information:

- DMSII databases
- DMSII audit trails for databases
- SIM databases
- SIM audit trails for databases
- Transaction trails for databases
- COMS transaction trails (programs independent of databases)
- COMS configuration file

Also presented are example backup procedures for the following:

- Transaction trails for databases
- COMS transaction trails
- COMS configuration file

Specific backup procedures and frequency depend on your specific environment and needs.

Backup Guidelines

For specific information on backing up a DMSII database and DMSII audit trails, refer to the *A Series DMSII Utilities Operations Guide.*

Because SIM uses the same utilities as DMSII for backing up a database and audit trails, you can use the same backup procedures provided in the *A Series DMSII Utilities Operations Guide.*

You must back up all COMS transaction trails for a given DMSII or SIM database on a regular basis. Such backup helps you to reconstruct the database in the event that information in the database or audit trail for that database is either corrupted or lost.

The COMS transaction trails for the database, the DMSII or SIM audit trails for the database, and the DMSII or SIM database itself need to be backed up regularly to tape or to disk on separate packs. This backup procedure helps to ensure that at least two of these potential sources of recovery information are valid. The database must be maintained in such a manner that the loss of any one of the backup media would not prevent recovery.

You must also back up the COMS configuration file regularly to help assure that recovery of the COMS configuration file can be accomplished in the event that information in the file is either corrupted or lost.

Backing up the COMS transaction trails enables you to recover monitor and statistical information.

The recommended frequency of backup and the recommended number of backup cycles to maintain for various kinds of information associated with a COMS network/DMSII or SIM database environment are indicated in Table 6–1.

Table 6–1. Backup Recommendations

Kinds of Information to Back Up	Frequency of Backup	Minimum Number of Backup Cycles to Maintain
DMSII or SIM databases	As often as practical, but no more than once a day	3 cycles
DMSII or SIM audit trails for each database	At least once a day	The number required to reconstruct the database from the oldest database backup
COMS transaction trails for each database	At least once a day	The number required to reconstruct the database from the oldest database backup
COMS configuration file	Daily, and whenever transaction trails for databases are backed up	No fewer than the number of cycles maintained for backup of transaction trails for databases

Information in the COMS configuration file can be changed through the COMS Utility. Therefore, Unisys recommends that you concurrently back up the COMS transaction trails for databases and the COMS configuration file. This practice helps to assure that the means is available to reapply transactions consistently to recover a database.

In situations where a particular COMS network/DMSII or SIM database environment includes more than one database, your needs as a user determine whether it is preferable to back up the COMS transaction trails for each database separately or on one tape or disk. The sizes of your COMS transaction trail files can be a factor in determining which way is preferable.

Backup Instructions

You must always close a COMS transaction trail before you back it up. Backing up an open COMS transaction trail always produces errors.

You can use two methods for backing up COMS transaction trails:

1. The COPY entry on Menu-Assisted Resource Control (MARC) menus.

2. The WFL *COPY* statement. For an explanation of the COPY statement and its options, refer to the *A Series Work Flow Language (WFL) Programming Reference Manual.*

Recovery Procedures

In most instances of system failure, COMS automatically recovers the affected databases. The exceptional situations in which operator action is required to recover a database are considered in the paragraphs that follow. Also considered is the situation in which the COMS configuration file has been corrupted or lost and needs to be recovered.

For specific information and instructions pertaining to recovery of a DMSII database, refer to the *A Series DMSII Utilities Operations Guide*.

Because SIM uses the same utilities as DMSII to recover a database and audit trails, you can use the same recovery procedures provided in the *A Series DMSII Utilities Operations Guide*.

Recovering a DMSII Database

Synchronized recovery of a DMSII database is made possible by the COMS transaction trails. A COMS transaction trail is a file in the database (DB) library that contains a series of time-ordered transactions that can be reapplied to the database in a synchronous manner, which provides synchronized recovery in the event of a transaction state termination, system crash, or rollback. COMS transaction trails for a database serve as an important backup medium.

You should maintain a DMSII database in such a manner that the loss of any one of the backup media for that database would not prevent recovery. (Refer to "Backup Guidelines and Procedures" earlier in this section.)

The COMS backup media for a DMSII database include the following:

- DMSII database backup tape or disk files

- DMSII audit trail backup tape or disk files

- COMS transaction trail backup tape or disk files

To minimize the effect of the failure of a single component, the current database, its audit trails, and its COMS transaction trails should reside on separate units. Two of these three elements are required for recovery of a database.

The following are three of the most likely situations that could require operator action to recover a database in a COMS network/DMSII database environment:

- The current database is corrupted or lost.

- Some of the audit trails for the database are lost.

- The current database along with the COMS transaction trails for the database are lost.

When the Current DMSII Database Is Corrupted or Lost

In a situation where the current database is corrupted or lost, you must perform the following actions to recover the database:

1. Disable the database through COMS by using the DISABLE command.

2. Use the RECOVER option of the DMUTILITY program to load the most recent backup of the database, or, if possible, to rollback the current database to an earlier time. The DMUTILITY program RECOVER option applies the audit trails for the database up to the last quiet point before the problem occurred.

3. Enable the database through COMS by using the ENABLE command. As a result, COMS rolls the database forward from where DMSII recovery left off to the end of the COMS transaction trails.

When the COMS transaction trail or trails have been applied, the result should be recovery of the database with no loss of system-acknowledged transactions (processing transactions that are acknowledged by messages from COMS). It is possible that some transactions that are not acknowledged by the system could also have been processed. Each user who entered any transactions should be made aware of this possibility. Moreover, procedures should be established to determine whether the last transaction entered by a user but not acknowledged has been processed.

When Audit Trails for a Corrupted DMSII Database Are Lost

In a situation where parts of the audit trail or trails for the database are lost, you must perform the following actions to recover the database:

1. Disable the database through COMS by using the DISABLE command.

2. Use the DMUTILITY program to load the most recent backup of the database. If this backup is the result of an online dump, the audit trails associated with it must also be loaded.

3. Enable the database through COMS by using the ENABLE command. This action causes COMS to roll the database forward to the end of the COMS transaction trails.

When the COMS transaction trail or trails have been applied, the result should be recovery of the database.

When the Current DMSII Database and Its Trails Are Lost

In a situation where the COMS transaction trail or trails for the database are lost, you must perform the following actions to recover the database:

1. Disable the database through COMS by using the DISABLE command.

2. Load the most recent backup of the database.

3. Roll the database forward to the last quiet point before the problem occurred by applying the audit trails for the database up to that point.

4. Instruct COMS to create a new COMS transaction trail for the database by using the Database Recovery Control screen of the COMS Utility and placing a Y in the Set RDS Pointer to End (Y/N) field.

The result should be recovery of the database with the following exception: any transactions not recovered by DMSII are lost.

The loss of COMS transaction trails (transaction trails for programs independent of databases) does not cause update information to be missing from the database. COMS transactions only reflect such information as monitor and statistical information, but not as information that modifies a database.

Recovering a SIM Database

You should maintain a SIM database in such a manner that the loss of any one of the backup media for that database would not prevent recovery. (Refer to "Backup Guidelines and Procedures" earlier in this section.)

The COMS backup media for a SIM database include the following:

- SIM database backup tape or disk files

- SIM audit trail backup tape or disk files

- COMS transaction trail backup tape or disk files

To minimize the effect of the failure of a single component, the current database, its audit trails, and its transaction trails should reside on separate units. Two of these three elements are required for recovery of a database.

The following are three of the most likely situations that can require operator action to recover a database in a COMS network/SIM database environment:

- The current database is corrupted or lost.

- Some of the audit trails for a corrupted database are lost.

- The current database along with the COMS transaction trails for the database are lost.

When the Current SIM Database Is Corrupted or Lost

In a situation where the current SIM database is corrupted or lost, you must perform the following actions to recover the database:

1. Disable the database through COMS by using the DISABLE command.

2. Use the RECOVER option of the DMUTILITY program to load the most recent backup of the database, or, if possible, to roll back the current database to an earlier time. The DMUTILITY program RECOVER option applies the audit trails for the database up to the end of the last audit.

3. Enable the database through COMS by using the ENABLE command. If the database has been rolled back, COMS reapplies the transactions. If the database has not been rolled back, COMS reapplies the transactions that were saved in the protected input queues.

When the COMS transaction trail or trails have been applied, the result should be recovery of the database with no loss of system-acknowledged transactions (processing transactions that are acknowledged by messages from COMS). It is possible that some transactions that are not acknowledged by the system could also have been processed. Each user who entered any transactions should be made aware of this possibility. Moreover, procedures should be established to determine whether the last transaction entered by a user but not acknowledged has been processed.

When Audit Trails for a Corrupted SIM Database Are Lost

In a situation where parts of the audit trail or trails for the database are lost, you must perform the following actions to recover the database:

1. Disable the database through COMS by using the DISABLE command.
2. Use the DMUTILITY program to load the most recent backup of the database. If this backup is the result of an online dump, the audit trails associated with it must also be loaded.
3. Enable the database through COMS by using the ENABLE command. If the database has been rolled back, COMS reapplies the transactions. If the database has not been rolled back, COMS reapplies the transactions that were saved in the protected input queues.

When the COMS transaction trail or trails have been applied, the result should be recovery of the database.

When the Current SIM Database and Its Trails Are Lost

In a situation where the COMS transaction trail or trails for the database are lost, you must perform the following actions to recover the database:

1. Disable the database through COMS by using the DISABLE command.
2. Load the most recent backup of the database.
3. Roll the database forward to the point of the last audit by applying each audit trail for the database up to that point.
4. Instruct COMS to create a new COMS transaction trail for the database by using the Database Recovery Control screen of the COMS Utility and placing a Y in the Set RDS Pointer to End (Y/N) field.

If the database has been recovered through the end of the last audit, COMS processes all transactions held in protected input queues.

The loss of COMS transaction trails (transaction trails for programs independent of databases) does not cause update information to be missing from the database. COMS

transactions only reflect such information as monitor and statistical information but not information that modifies a database.

Recovering a COMS Configuration File

If the COMS configuration file has been corrupted or lost, perform the following steps to recover it:

1. Shut down the COMS network.

2. Load the most recent backup disk or tape of the COMS configuration file.

3. Reinitialize COMS.

4. Load any appropriate recording files through the COMS Utility.

Recovering Protected Output Messages

COMS can recover protected output messages when it is used in conjunction with Logic and Information Network Compiler II (LINC II) software relative to release 14 or greater.

Using a variation of the RECALL command, you can have the system display the protected output from the last successful protected transaction. This capability is useful after a system failure and recovery, because the messages can be used to identify the last completed transaction and to determine where to begin again. The command can also be used to refresh protected output messages that have been erased accidentally.

The syntax for the RECALL command is as follows:

```
?RECALL
```

If the window is not a protected window (a window that uses the protected output option), or there is no protected output to be shown, the system returns one of the following error messages:

```
The dialog does not use output protection
```

```
There is no protected output
```

Section 7
Retrieving Information Related to COMS

You can retrieve various kinds of information related to COMS through the operations presented in this section. For example, you can display information that describes stations and gives their status as to condition (ready, enabled, and so forth) and window access (window available, open, closed, and so forth).

You can display the status of a window (enabled or disabled) and its current user count, as well as a list of programs that are running.

You can monitor various COMS activities such as beginning-of-job (BOJ) and log-off operations, and you can trace diagnostic data such as all queue inserts and removals.

Instructions for printing the information or writing it to disk are provided, where applicable.

The functions that enable you to retrieve information related to COMS stations and windows are listed in Table 7-1. Each function is followed by its corresponding command.

Table 7-1.   Retrieving Information from COMS Stations

Function	Command
Displaying information about stations	REPORT
Displaying status information	STATUS
Displaying the COMS window environment	WINDOWS
Displaying a list of running programs	JOBS
Monitoring COMS activities	MONITOR
Tracing diagnostic data	TRACE

A discussion of the HELP command provided by Menu-Assisted Resource Control (MARC) is also presented. The HELP command can be used to display a list of COMS topics you can access and the information that explains a specific topic.

Displaying Information about Stations: REPORT Command

Use the REPORT command to display COMS network-related information about your station, specific stations, or all stations. The following information is provided:

- Station name.

- Kind of station: monitor (M) or control (C), or both.

- Usercode, if any.

- Station identification.

- The current window dialog at the station, including the name of the window and the dialog number.

- Information on stations open to a specific window defined through the COMS Utility program, such as direct, message control system (MCS), and declared remote-file windows. The command does not display information about dynamic remote-file windows.

- Total number of active stations.

The REPORT command is valid for any user at any station, and it must be entered with a question mark (?) prefix in all windows except MARC.

Syntax

```
— REPORT ┬─────────────────────────────────────────────────────%
          ├─ ALL ──────────────────────────┐
          │              ┌─<station list>─┤
          ├─ STATION ─┘                    │
          ├─ WINDOW ──<declared window name>─┤
          └─ # ────────────────────────────┘
```

```
<station list>

        ┌←────── , ──────┐
────────┼─┴─<station name>─┴─────────────────────────────────────%
        │   ┌←── , ──┐
        ├─┴─<LSN>─┴─┘
        └─<LSN>── - ──<LSN>─┘
```
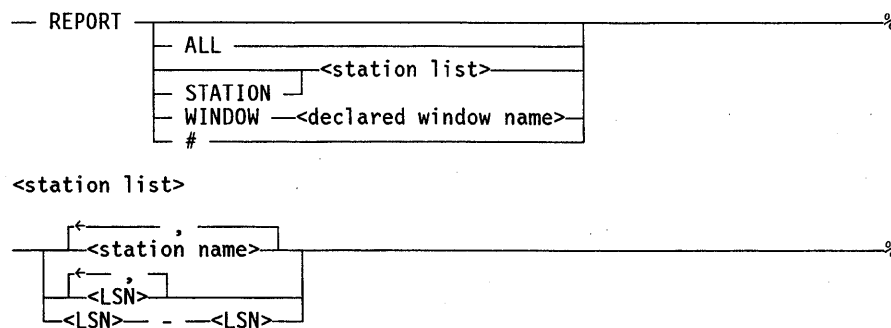
Explanation

The following examples assume the REPORT command is entered from the MARC window; therefore, the question mark (?) prefix is not used.

REPORT

Displays COMS network-related information about your station.

REPORT ALL

Displays COMS network-related information about all stations that are active (that have open window dialogs). When the information is displayed, an arrowhead precedes the name of your station (the station where this command was entered).

REPORT <station list>
REPORT STATION <station list>

Displays COMS network-related information about specific stations. If you list logical station numbers (LSNs), they must be in ascending order.

For example, the following command can be used to display COMS network-related information about stations E576, E678, and E789:

```
REPORT STATION E576, E678, E789
```

REPORT WINDOW <declared window name>

Displays COMS network-related information about all stations that have open dialogs with a specific declared window.

For example, the following command can be used to display COMS network-related information about stations open to the Editor window, and the total number of such stations:

```
REPORT WINDOW EDITOR
```

REPORT #

Displays the total number of active stations (stations with open window dialogs).

Displaying Status Information: STATUS Command

Use the STATUS command to display the status of a station, window, program, or database.

The STATUS command is valid for any user at any station, and it must be entered with a question mark (?) prefix in all windows except MARC.

Syntax
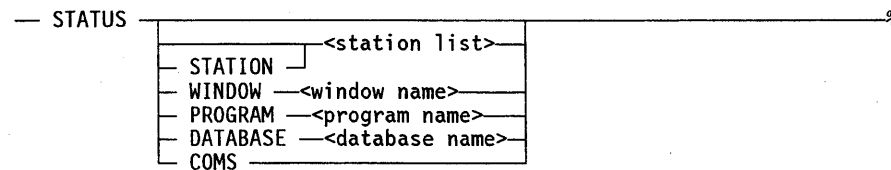
```
— STATUS ─┬────────────────────────┬──────────────────────%
           │              ┌<station list>─┐
           ├─ STATION ─┘                  │
           ├─ WINDOW ──<window name>──────┤
           ├─ PROGRAM ──<program name>────┤
           ├─ DATABASE ──<database name>──┤
           └─ COMS ───────────────────────┘
```

```
<station list>
```
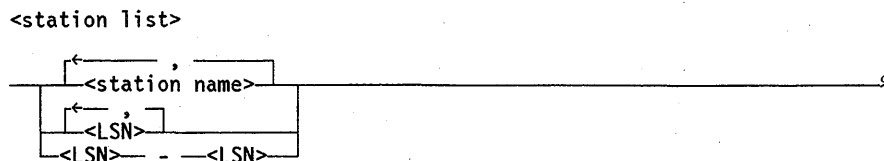

Explanation

The following examples assume the STATUS command is entered from the MARC window; therefore, the question mark (?) prefix is not used.

STATUS

Displays the status of your station.

STATUS <station list>
STATUS STATION <station list>

Displays the status of a station other than the one you are on. If you list logical station numbers (LSNs), they must be in ascending order. The status of a station includes the following information:

- DLS number

- Logical station number (LSN)

- Station name

- Condition of the station: ready or not-ready, enabled or disabled, attached or unattached, whether the line the station is on is connected or not connected, whether the station is on a switched (dial-up) line

- Number of messages queued for the current window

- Usercode at the station

- Current window name and dialog number

The DLS number is made up of three numbers separated by colons. The first number is the front-end processor (network support processor) number. The second number is the line number. It is computed by multiplying the line support processor (LSP) number by 16 and then adding the adapter number. The third number is the station number. For example, if a station's DLS number is 1:30:2, the station is connected to front-end processor number 1, is on line 30, and is station number 2.

For example, the following command displays the status of station E474:

```
STATUS STATION E474
```

STATUS WINDOW <window name>

Displays the status of a window. The status of a window includes the following information:

- Condition of the window (enabled or disabled)
- The user count for the window
- The number of messages from the window that are tanked for the station you are on

For example, the following command displays the status of the Editor window:

```
STATUS WINDOW EDITOR
```

STATUS PROGRAM <program name>

Displays the status of a program. The following information about the program is included:

- Program name.
- Name of the window associated with the program.
- Code file name.
- Status of the program (enabled or disabled).
- Number of messages queued for the program. This information has meaning only for windows defined to COMS through the COMS Utility as direct-window programs.
- Number of messages the program has processed since COMS was initiated. This information has meaning only for windows defined to COMS through the COMS Utility as direct-window programs.
- Copy number, mix number, and any associated RSVP messages for each copy of the program that is running.
- Name of the database associated with the program (through the COMS Utility), if any.
- Response time of the program. This time is only meaningful for programs that use the direct interface. The time is a record of how long it took for the program to process the last transaction, based on the time that elapsed between the system first seeing the last message submitted to the program and the program sending the next output. For this time to be valid, the same copy of the program that received the input must send the output associated with that transaction.

For example, the following command displays the status of program ABC:

```
STATUS PROGRAM ABC
```

STATUS DATABASE <database name>

Displays the status of a database. The following information about the database is included:

- Name of the database

- Number of the current COMS transaction trail for the database

- Status of the database (enabled or disabled)

- Mix number for the library associated with the database

- Mix number for the COMS control stack under which the database is running

For example, the following command displays the status of database ABC:

```
STATUS DATABASE ABC
```

STATUS COMS

Displays the following information about the status of COMS:

- The total number of times the physical disk has read the input queue since the last initialization of COMS.

- The total number of times the physical disk has written to the input queue since the last initialization of COMS.

- The targeted maximum amount of memory that COMS can use for input queue buffers, as specified by the ALLOWEDCORE field in the Global screen of the COMS Utility. Occasionally, the amount of memory in use might be exceeded, but input to the system must continue, even though the input rate exceeds the ability of the system to digest that input. When the amount of memory exceeds the targeted amount, the processes putting messages into the input queues are delayed.

  This delay is relative to the amount that the in-use memory exceeds the target; therefore, configure the amount of memory allocated to each queue so the total exceeds the target. It is the user's responsibility to ensure the total memory permitted for all programs running at any time does not exceed the ALLOWEDCORE target. If the total memory used by all the programs running concurrently exceeds the target, a delay on every input occurs.

- The actual amount of memory in use for all input queues.

- The point at which the amount of in-use memory triggers delay of the input processes. COMS attempts to determine when to commence the delays to minimize the number of instances when the in-use memory exceeds the target.

- The amount of time each input is currently delayed because of excess memory use.

- The total amount of time that all inputs have been delayed since the last initialization of COMS.

- The maximum number of users enabled to log on.

- The current number of users logged on.

- The peak load of users for this COMS session.

Displaying the COMS Window Environment: WINDOWS Command

Use the WINDOWS command to display the current COMS window environment (a list of the currently available windows) for your station or a specific station.

Except for the usage restrictions for certain options, the WINDOWS command is valid for any user at any station, and it must be entered with a question mark (?) prefix in all windows except MARC.

Syntax

```
— WINDOWS ─┬──────────────┬─┬────────────────────────────┬─%
           └─<option list>┘ │        ┌─<station name>─┐   │
                            └─ OF ─┴─<LSN>──────────┘

<option list>

    ┌←──────────────┐
──┬─┬─ OPEN ──────┬─┴──────────────────────────────────────%
    ├─ CLOSED ────┤
    ├─ SUSPENDED ─┤
    ├─ DISABLED ──┤
    └─ ACTIVE ────┘
```

Explanation

The following examples assume the WINDOWS command is entered from the MARC window; therefore, the question mark (?) prefix is not used.

WINDOWS

Displays the following window environment information for your station:

- The current window dialog at the station (marked by an arrowhead).

- The number of messages from each window that are tanked for the station.

- A count of the number of users on each window.

- The maximum number of users each can support.

<option list>

The options that you can select for the WINDOWS command are defined in Table 7-2.

Table 7-2.   WINDOWS Command Options

Option	Description
OPEN	Displays all the windows that are in use and receiving messages.
CLOSED	Displays all the windows not in use.
SUSPENDED	Displays the windows that are open but are not receiving messages because of the user's request. COMS displays a list of tanked outputs for the windows.
DISABLED	Displays windows that cannot be accessed.
ACTIVE	Displays all open windows and suspended windows.

If you do not specify any of the above options, all the options are returned.

WINDOWS <option list>

Displays window information for your station based on the options that you specify. You can enter one or more options, but multiple entries must be separated by blank spaces.

For example, to display the open and closed windows for your station, enter the following command:

```
WINDOWS OPEN CLOSED
```

WINDOWS <station name>
WINDOWS <LSN>
WINDOWS OF <station name>
WINDOWS OF <LSN>

Displays the environment for a specific station. These versions of the WINDOWS command are only valid for control-capable users or from control-capable stations.

For example, the following command displays the window environment for station E789:

```
WINDOWS E789
```

WINDOWS <option list> <station name>
WINDOWS <option list> <LSN>
WINDOWS <option list> OF <station name>
WINDOWS <option list> OF <LSN>

Displays window information for a specific station based on the options that you specify. You can enter one or more options, but multiple entries must be separated by blank spaces. These versions of the WINDOWS command are only valid for control-capable users or from control-capable stations.

For example, the following command displays the open and suspended windows at station E789:

```
WINDOWS OPEN SUSPENDED OF E789
```

Displaying a List of Running Programs: JOBS Command

Use the JOBS command to display a list of programs that are running, together with |
the associated COMS windows.

The JOBS command is valid for any user at any station, and it must be entered with a |
question mark (?) prefix in all windows except MARC.

The JOBS command provides you with the following capabilities:

● Displaying programs that are running in windows you can access

● Displaying all programs that are running

● Displaying programs that are running in a specific window

Syntax

```
— JOBS ─┬─ COMS ─┬──────────────────────────────────────────────────%
        │        └─ ALL ──────────────────────────────┐
        ├──────────┬─ WINDOW ─<declared window name>─┘
        └─ IN ─┘
```
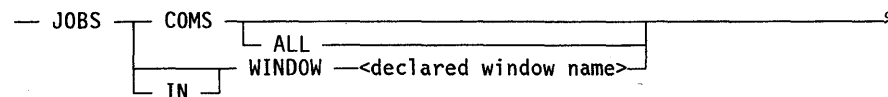
Explanation

The following examples assume the JOBS command is entered from the MARC window; therefore, the question mark (?) prefix is not used.

JOBS COMS

Displays a list of the programs that are running in the COMS windows you can access.

JOBS COMS ALL

Displays a list of the programs that are running in the entire COMS window environment.

JOBS WINDOW <declared window name>
JOBS IN WINDOW <declared window name>

Displays a list of the programs that are running in a specific window.

For example, the following command displays the list of jobs that are running in the window named ERGO:

```
JOBS IN WINDOW ERGO
```

Monitoring COMS Activities: MONITOR Command

Use the MONITOR command to set the monitoring of COMS activities at all monitor stations. You can also use this command to specify the records that are to be printed or written to disk. You can use the MONITOR command to discontinue monitoring and to display the monitor options that are set.

The MONITOR command is only valid for control-capable users or from control-capable stations, and it must be entered with a question mark (?) prefix in all windows except MARC.

Monitor stations are terminals defined to display records of all detected data communications errors by default and to display records of all COMS activities that are set as monitor options. Monitor stations are defined through the COMS Utility.

When a monitor option is turned on, records of all activities of the given kind are displayed at all monitor stations under the following circumstances:

- The monitor list is declared in the configuration file.

- The station is in the list.

- Someone is signed on to the station.

If no station satisfies the above conditions, the information is sent to the ODT.

The monitor options that are turned on are not retained by COMS if the system goes down and comes back up. Otherwise, these options remain in effect until they are modified by using another MONITOR command.

COMS has a security station feature that is similar to the existing COMS monitor station. The security stations receive notification of all security-related events on the system. Optionally, the security stations can receive certain messages that would otherwise appear on the COMS monitor stations. Information on how to create a security station is provided in the *A Series COMS Configuration Guide*.

Security messages sent to the designated security stations include the various master control program (MCP) security violations, and COMS security messages. COMS security messages are sent to security stations under the following circumstances:

- Logging on to the system with an invalid usercode or password

- Attempting to access a window not authorized for the usercode

- Attempting to access the COMS Utility with the ON or PASS commands

Security stations, instead of monitor stations, can also receive log-on and log-off notifications. For example, if a control-capable user enters MONITOR LOGOFF, the designated security station receives a message whenever a user logs off. If no security stations exist, COMS attempts to send the message to any monitor stations that are logged on. If no monitor stations are logged on, the message is sent to the ODT.

The MONITOR command provides you with the following capabilities:

- Displaying the monitor options that are set ·
- Setting specified monitor options
- Discontinuing the monitoring of specified options
- Setting all monitor options
- Discontinuing the monitoring of all options
- Printing monitored information
- Writing monitored information to disk

Syntax

```
— MONITOR ──┬─────────────────────────────────────────────────%
            ├─ NONE ──────────────────────────────┐
            │                           ┌─ ALL ────┤
            └─ TO ─┬─ PRINTER ─┐        └─ <options> ─┘
                   └─ DISK ────┘
```

`<options>`

```
              ┌─←─────────────────┐
              │      ┌─←─ , ─┐     │
          ┌───┼──────┴───────┴─────┤
──┬─ + ─┬─┤    ├─ ATTACH ──────────┤──────────────────────%
  └─ - ─┘ │    ├─ BOJ ──────────────┤
          │    ├─ EOJ ──────────────┤
          │    ├─ LOGOFF ───────────┤
          │    ├─ LOGON ────────────┤
          │    └─ SECURITY ─────────┘
```
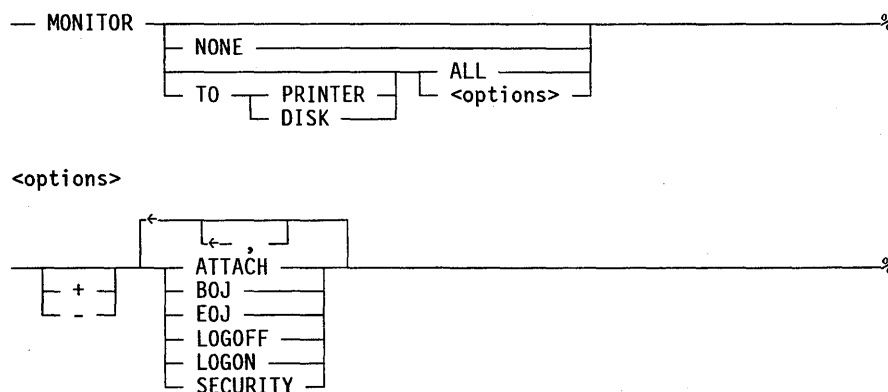
Explanation

The following examples assume the MONITOR command is entered from the MARC window; therefore, the question mark (?) prefix is not used.

MONITOR

Displays at your station the monitor options that are turned on for all stations.

MONITOR NONE

Discontinues all monitor options that are turned on.

MONITOR ALL

Turns on all the monitor options.

Table 7–3 lists the monitor options that can be turned on or discontinued for all monitor stations by using the MONITOR command.

Table 7–3.   MONITOR Command Options

Option	Description
ATTACH	All attachments of stations to COMS, and all detachments of stations from COMS
BOJ	All beginning of jobs (BOJs)
EOJ	All end of jobs (EOJs)
LOGOFF	All log off operations
LOGON	All log on operations
SECURITY	All attempted security breaches, which include the following: ● Logging on to the system with an invalid usercode. ● Accessing a window not authorized for the usercode. However, if you attempt to access an unauthorized window and mistype its name (such as *?ON CNADE*), no attempted breach of security is reported to the monitor station. ● Accessing the COMS Utility window from a station other than a control-capable station, or by a user who is not a control-capable user. If you enter the command MONITOR SECURITY, you might not receive any security messages at a monitor station, because a security station list has been declared in the COMS Utility to restrict access to security messages.

MONITOR <options>
**MONITOR + ** <options>

Turns on any monitor options. Monitor options are separated by a blank, a comma, or both.

For example, the following command monitors all BOJs and EOJs at all monitor stations:

```
MONITOR + BOJ, EOJ
```

**MONITOR – ** <options>

Discontinues specified monitor options that are turned on. Monitor options are separated by a blank, a comma, or both.

For example, the following command discontinues the monitoring of BOJs and EOJs at all monitor stations:

```
MONITOR - BOJ, EOJ
```

MONITOR TO PRINTER < options >

Specifies that all information reflecting the monitor options named in the MONITOR command be printed, in addition to being displayed at all monitor stations. Note that the printer must be in the ready state.

For example, the following command monitors and prints all BOJs and EOJs. This action occurs at all monitor stations.

```
MONITOR TO PRINTER BOJ EOJ
```

MONITOR TO DISK <options>

Specifies that all information reflecting the monitor options named in the MONITOR command be written to disk, in addition to being displayed at all monitor stations. The disk file name is COMS/LOG/mmddyy/hhmmss.

For example, the following command monitors and writes to disk all BOJs and EOJs. This action occurs at all monitor stations.

```
MONITOR TO DISK BOJ EOJ
```

MONITOR TO PRINTER ALL

Monitors all the options to the printer.

MONITOR TO DISK ALL

Monitors all the options to disk. The disk file name is in the following form:

```
COMS/MONITOR/mmddyy/hhmmss
```

Note: *The MONITOR file is on the same family as the COMS codefile.*

Tracing Diagnostic Data: TRACE Command

Use the TRACE command to capture and record all occurrences of selected COMS operational events. The resulting trace diagnostic data is written to disk with a file name of the form COMS/TRACE/<mmddyy/<hhmmss>. This "trace capture" file can then be analyzed to produce formatted output reports. (See "Using the Trace Analyzer" in the following section.)

Once initiated, the trace capture operation continues until it is terminated by another TRACE command, or until the system goes down.

The TRACE command is only valid for control-capable users or from control-capable stations, and it must be entered with a question mark (?) prefix in all windows except MARC.

In addition to starting and stopping the trace capture function, you can use the TRACE command to:

• Display the current trace options for an active trace capture operation

• Add or delete individual or multiple trace options for an active trace capture operation

• Specify either all or none of the trace options

The trace options indicate the COMS operational events that are recorded in the trace capture file. Table 7–4 describes the trace options that can be set or disabled with the TRACE command.

Table 7–4. Trace Option Descriptions

Trace Option	Captures Information About
COMMANDS	All COMS commands issued and their associated responses
DCWRITE	All DCWRITE messages issued by COMS to the operating system
DCRESULT	All DCRESULT messages received by COMS from the operating system
QUEUE	All queue inserts and removes
TASKS	All beginning-of-task (BOT) events and end-of-task (EOT) events, and all events associated with managing tasks
TANK	All activities associated with managing the COMS tank
DCI	All activities associated with agenda processing and the data communications interface (DCI) library
INPQ	All activities associated with the COMS input queue
OUTPQ	All activities associated with the COMS protected output queue files

Note: *Once they are set for a trace capture operation, the trace options remain in effect until they are disabled by another TRACE command. They are not, however, retained by COMS if the system goes down and comes back up. In that case, the prior trace capture operation is terminated and its trace capture file is closed.*

Syntax

```
─ TRACE ─┬──────────────┬──────────────────────────────%
         ├─ NONE ──────┤
         ├─ ALL ───────┤
         └─ <options> ─┘
```

<options>

```
        ┌←──────────────────┐
        │    ┌←─ , ─┐        │
────────┼────┬─ COMMANDS ─┬──┴──────────────────────────%
 ┌─ + ─┐│    ├─ DCWRITE ──┤
─┤     ├┘    ├─ DCRESULT ─┤
 └─ - ─┘     ├─ QUEUE ────┤
             ├─ TASKS ────┤
             ├─ TANK ─────┤
             ├─ DCI ──────┤
             ├─ INPQ ─────┤
             └─ OUTPQ ────┘
```
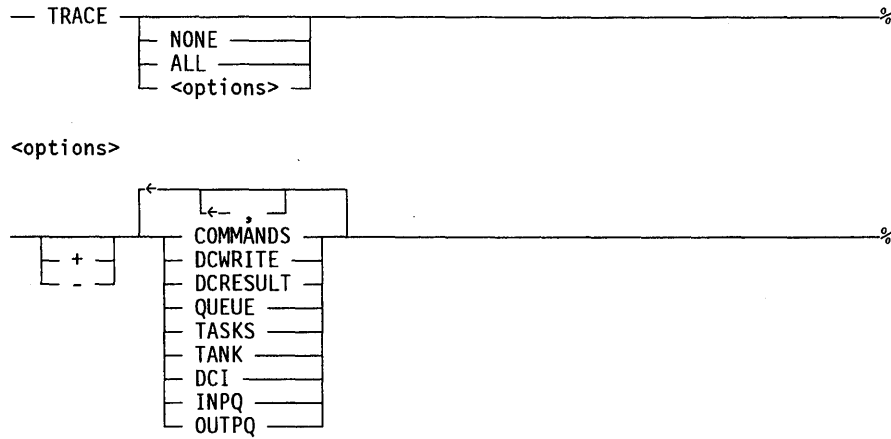
Explanation

The following examples assume the TRACE command is entered from the MARC window; therefore, the question mark (?) prefix is not used.

TRACE

This command displays the trace options that are currently set for an active trace capture operation.

TRACE NONE

This version of the TRACE command terminates the trace capture operation, closes the trace capture file, and resets all of the trace options.

TRACE ALL

This command initiates a trace capture operation with all trace options active. If a trace capture operation is already in progress, this command adds all of the disabled options to the current operation.

TRACE <options>
TRACE + <options>

This command initiates a trace capture operation with the specified trace options active. If a trace capture operation is already in progress, this command adds the specified options to the current operation.

The names of the trace options can be separated by blank spaces, commas, or both. For example, the following command sets trace options for COMS command usage and DCWRITE messages:

```
TRACE + COMMANDS, DCWRITE
```

TRACE – <options>

This command disables the specified trace options for an active trace capture operation. And, if this command disables the last option, it also terminates the trace capture operation and closes its trace capture file.

The names of the trace options can be separated by blank spaces, commas, or both. For example, the following command discontinues the tracing of COMS command usage and DCWRITE messages:

```
TRACE - COMMANDS, DCWRITE
```

Displaying Information about COMS Topics: HELP Command

The HELP command is a MARC program command. It is not a COMS command. Therefore, do not use a prefix when you enter the command. This command is valid for any user at any station. Use the HELP command to display information about a particular COMS command.

For example, the following command provides help text about the abbreviation COMS on the main MARC menu:

```
HELP COMS
```

As another example, to display a list that presents all the COMS topics you can access for help text, enter the following:

```
HELP TOPICS IN BOOK/COMS/ENGLISH
```

You can also use the HELP command when you are using COMS commands through MARC menus. Simply place the cursor on the command you want to know about and press the SPCFY key. Help text appears for that command at the bottom of the screen. If you press the SPCFY key a second time, a more extended explanation of the command appears.

For more detailed information on use of the HELP command, refer to the *A Series MARC Operations Guide*.

Section 8
Using the Trace Analyzer

After you have used the COMS *TRACE* command to produce a trace capture file, you can use the Trace Analyzer to process the raw trace data and produce a formatted output report file. This report file can either be printed or written to disk.

This section explains how to use the Trace Analyzer screens and command options to specify the contents and format of your output reports. Table 8–1 lists the options you can select and the functions you can perform from each Trace Analyzer screen.

Table 8–1. Trace Analyzer Screen Functions

Use this Trace Analyzer screen:	When you want to:

Home	• Select another Trace Analyzer screen:
	  – Custom Output Options
	  – General Selection Options
	  – Global Trace Options
	  – Load/Save Options
	  – Source Selection Options
	  – Subsource Selection Options
	• Load or save an options file
	• Start the trace analysis

General Selection Options	• Specify start and stop times and dates
	• Specify individual:
	  – Mix numbers
	  – Stack numbers
	  – Sequence numbers

Load/Save Options	• Save a new or modified trace options file • Load an existing file trace options file

Table 8–1. Trace Analyzer Screen Functions (cont.)

Use this Trace Analyzer screen:	When you want to:

Global Trace Options	• Specify the title of the trace capture file to be analyzed (the Run Time Option)
	
	• Select the destination for the output report:
	  – Printer
	  – Disk
	
	• Specify the output format options:
	  – Group by word (yes or no)
	  – Hex data format (horizontal or vertical)
	  – Printer line delimiter character

Custom Output	• Specify the output information that will be included and the order of its presentation:
	  – Time
	  – Date
	  – Sequence Number
	  – Stack Number
	  – Mix Number
	  – Source Name
	  – Source Number
	  – Subsource Name
	  – Subsource Number
	  – User Data
	  – Trace Data
	
	• Specify the maximum number of lines for each trace entry
	
	• Specify the number of blank space characters to be used as field separator characters
	
	• Specify a dash character line separator between each trace entry

Source Selection Options	Specify which information sources will be included in your analyzer output report
Subsource Selection Options	Specify which information subsources will be included in your analyzer output report

Running the Trace Analyzer

You can run the Trace Analyzer either through a declared remote-file window, or by executing a CANDE or MARC *RUN* statement. To run the Trace Analyzer through a remote-file window, you must have defined program and window entities in the COMS configuration file with the following declarations:

Program Declarations:

Program name	TRACEANALYZER
Remote-file interface	Y
Remote users	1

> *Note:* *This program must be declared as a single-user remote-file program.*

Maximum copies	10
Title	*SYSTEM/COMS/TRACE/ANALYZER ON <pack name>

Window Declarations:

Window name	TRACEANALYZER
Remote-file window	Y
Remote-file program	TRACEANALYZER

(Refer to the *A Series COMS Configuration Guide* for information on defining program and window entities.)

If the appropriate program and window declarations have been made in the COMS configuration file, you can enter the following command to run the Trace Analyzer:

    ?ON TRACEANALYZER

Regardless of whether a remote-file program and window have been declared, you can always run the Trace Analyzer by entering and transmitting the following RUN statement either as a CANDE command or from the MARC *RUN* screen:

    RUN *SYSTEM/COMS/TRACE/ANALYZER ON <pack name>

In either case, COMS displays the Trace Analyzer Home screen, as shown in Figure 8-1.

If instead of the Home screen, you see an exception message that the trace format object file (SYSTEM/COMS/TRACE/FORMATS) is either missing, invalid, or empty correct the indicated problem and repeat the program execution.

```
              HOME - COMS TRACE ANALYZER                                COMS
    Action: [                                                              ]
             HOme  GO  Run  BYE                      (Press SPCFY for Help)

    Screen Choices

    CO   -  Custom Output Options
    GSO  -  General Selection Options
    GT   -  Global Trace Options
    LSO  -  Load / Save Options
    SS   -  Source Selection
    SUS  -  Subsource Selection

    Command Choices

    LOAD (Options File Title)
    SAVE (Options File Title)
    RUN  (Trace Capture File Title)

    Choice [
                                                     ]
```

Figure 8-1. The Trace Analyzer Home Screen

Using the Action Field of Trace Analyzer Screens

At the top of each Trace Analyzer screen is an Action field with the available actions
listed. You can specify an action by entering the entire name or its abbreviation in
either uppercase or lowercase letters. For example, the action "HOme" can be specified
by entering HOME, HO, or H.

The following list shows the Trace Analyzer action codes, their valid abbreviations, and
their descriptions.

Note: *The actions that are allowed only on a specific screen are indicated in
the description column.*

Action	Valid Abbreviations	Description
HOme	HOME, HO, H	To return to the COMS Trace Analyzer Home screen, enter HOME, HO, or H in the Action field and transmit.
GO	GO, G	To access another screen, enter GO or G and the abbreviation for the desired screen in the Action field and transmit.

continued

continued

Action	Valid Abbreviations	Description
RUN	RUN, R	To start the analysis of a trace capture file, enter RUN or R in the Action field and transmit.
MOdify	MODIFY, MO	To modify the values contained on a screen, enter MODIFY or MO in the Action field and transmit.
BYE	BYE, B	To send the Trace Analyzer to end-of-job, enter BYE or B in the Action field and transmit.
NExt	NEXT, NE, N	This is valid only for the Source and Subsource Selection Options screens. To display the next page of sources or subsources, enter NEXT, NE, or N in the Action field and transmit.
PRev	PREV, PR, P	This is valid only for the Source and Subsource Selection Options screens. To display the previous page of sources or subsources, enter PREV, PR, or P in the Action field and transmit.
STAtus	STATUS, STA, ST	This is valid only for the Trace Run Status screen. To display the status of a trace file that is currently being analyzed, enter STATUS, STA, or ST in the Action field and transmit.
QUit	QUIT, QU, Q	This is valid only for the Trace Run Status screen. To stop the trace file analysis without causing the Trace Analyzer to go to the end of job, enter QUIT, QU, or Q in the Action field and transmit.
LOad	LOAD, LO, L	This is valid only for the Load/Save Options screen. To load an existing trace options file, enter LOAD, LO, or L in the Action field and transmit.
SAve	SAVE, SA	This is valid only for the Load/Save Options screen. To save a new trace options file, enter SAVE or SA in the Action field and transmit.

Using the Trace Analyzer Home Screen

Use the Trace Analyzer Home screen (Figure 8–1), to either select one of the six other Trace Analyzer screens (the displayed Screen Choices), or to enter one of the th available command options (the displayed Command Choices).

The following subsections describe the selections you can make from the Trace Analyzer Home screen.

Screen Choices

You can use either of two methods to select one of the six listed Trace Analyzer screens from the Home screen:

- Enter the abbreviation of your selection in the Choice field and transmit the screen with the Action field blank.

- Enter GO, followed by a space and the abbreviation of your selection, in the Action field and transmit.

For example, to select the Custom Output Options screen choice, you could enter either CO in the Choice field, or GO CO in the Action field, and transmit. In either case, the Trace Analyzer will display the Custom Output screen.

The following list briefly describes each screen choice:

- CO - Custom Output Options

  Use this screen to specify the format of your analyzer output reports.

- GSO - General Selection Options

  Use this screen to specify selection options such as start and stop times and dates, and mix, stack, and sequence numbers for your analyzer output reports.

- GT - Global Trace Options

  Use this screen to specify the run time, destination, and formatting options for your analyzer output reports.

- LSO - Load/Save Options

  Use this screen to specify a file title for loading or saving the options you have specified for your analyzer output reports.

- SS - Source Selection

  Use this screen to specify the information sources that you want included in your analyzer output reports.

- SUS - Subsource Selection

  Use this screen to specify the information subsources that you want included in your analyzer output reports.

Command Choices

The LOAD and SAVE command choices must be entered, along with the title of the options file, in the Choice field. The RUN command choice can be entered in either the Choice field or the Action field. In either case, however, you must specify the title of the trace capture file that you want to analyze in the Choice field.

For example, you could use either of the following procedures to analyze a trace capture file called COMS/TRACE/082090/073249/ on PACK:

- From the Choice field:

    1. Enter the RUN command with the trace capture file title in the Choice field as follows:

           RUN COMS/TRACE/082090/073249 ON PACK

    2. Transmit the screen with the Action field blank.

- From the Action field:

    1. Enter the trace capture file title in the Choice field as follows:

           COMS/TRACE/082090/073249 ON PACK

    2. Enter and transmit the R or RUN action code in the Action field.

In either case, the Trace Analyzer will process the specified file and produce the appropriate output report.

The following list briefly describes each command choice:

- LOAD (Options File Title)

    Loads the specified trace options file to the Trace Analyzer so that it can be used or modified for subsequent analysis runs.

- SAVE (Options File Title)

    Saves the specified trace options file so that it can be loaded and used or modified later.

- RUN (Trace Capture File Title)

    Starts the analysis of the specified trace capture file, displays the Trace Run Status screen, as shown in Figure 8-2, and produces the appropriate output report.

Monitoring the Analysis: The Trace Run Status Screen

The Trace Run Status Screen, as shown in the Figure 8-2 example, is displayed in response to a Run action initiated from the Action field of a Trace Analyzer screen, or a RUN command choice initiated from the Choice field of the Trace Analyzer Home screen. This screen displays information about the trace capture file that is being analyzed plus status information about the progress of the analysis.

Note: *The Trace Status Screen is displayed only in response to a Run action or a RUN command. You cannot display this screen without initiating a trace analysis operation.*

```
            TR - TRACE RUN STATUS                                         COMS
   Action: [MO                                                               ]
           BYE   QUIT   STAtus                          (Press SPCFY for Help)


   Trace Capture File

               Title:  COMS/TRACE/082090/073249 ON PACK

       Total Records:  6000
             Created:  A10 SERIAL # 10
           Host Name:  MYHOST
        COMS Version:  39.000.001
         MCP Version:  39.000.001

   Status Information:

          Records Read:   3000
      Records Selected:   3000
      Percent Complete:     50
```
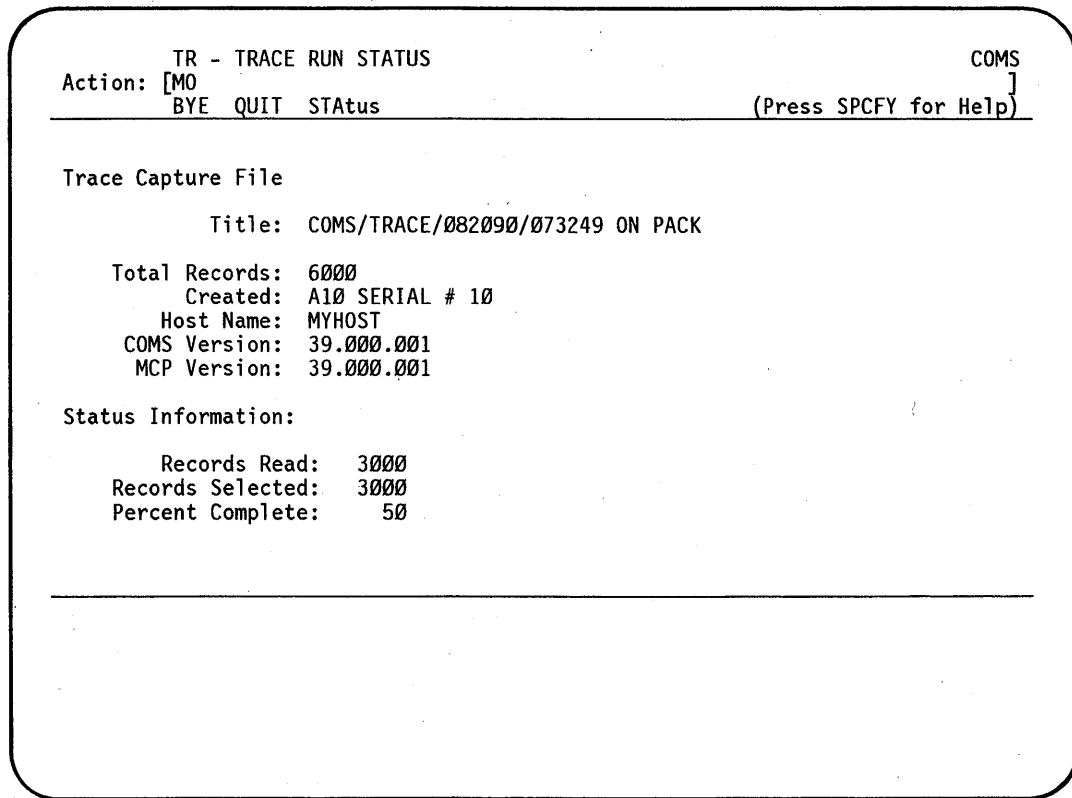
Figure 8-2.   Trace Run Status Screen Example

The following subsections describe the file and status information that is displayed on the Trace Run Status screen.

Trace Capture File Information

The following list briefly describes the Trace Capture File display fields on the Trace Run Status screen:

Display Field	Description
Title	Displays the title of the trace capture file being analyzed
Total Records	Displays the total number of records in the trace capture file
Created	Displays the system type and serial number of the host that created the trace capture file
Host Name	Displays the host name of the system that created the trace capture file
COMS Version	Displays the release version of the COMS software that created the trace capture file
MCP Version	Displays the release version of the MCP software on the system that created the trace capture file

Note: *If the trace capture file was created by a pre-3.9 Trace Capture Library, the information for the Created, Host Name, COMS Version, and MCP Version fields will not be available. In this case, a Not Available message is displayed in these fields.*

Trace Capture Status Information

The following list briefly describes the Status Information display fields on the Trace Run Status screen:

Display Field	Description
Records Read	Displays the total number of trace capture file records read up to this point
Records Selected	Displays the total number of trace capture file records selected up to this point
Percent Complete	Displays the percentage of the trace capture file that has been analyzed up to this point

Using the Custom Output Screen

To display the Custom Output screen, either select the CO - Custom Output Options choice on the Trace Analyzer Home screen or enter the GO CO action code in the Action field of another Trace Analyzer screen. Use this screen to define a customized format for analyzer output reports. As shown in Figure 8–3, you can customize your output reports by specifying the following:

● The output information that will be included and the order of its presentation

● The maximum number of lines for each trace entry

● The number of blank space characters to be used as field separators

● A dash character line separator between each trace entry

The following subsections describe the selections you can make from the Custom Output screen.

```
            CO - CUSTOM OUTPUT                                            COMS
    Action: [MO                                                             ]
            HOme  GO  Run  BYE  MOdify                    (Press SPCFY for Help)

    Field Name                     Output Order

    Time  . . . . . . . . . . . . [  ]
    Date  . . . . . . . . . . . . [  ]
    Sequence Number . . . . . . . [  ]
    Stack Number  . . . . . . . . [  ]
    Mix Number  . . . . . . . . . [  ]
    Source Name . . . . . . . . . [  ]
    Source Number . . . . . . . . [  ]
    Subsource Name  . . . . . . . [  ]
    Subsource Number  . . . . . . [  ]
    User Data . . . . . . . . . . [  ]
    Trace Data  . . . . . . . . . [  ]

    Maximum Output Lines  . . . . . . . . [1   ]
    Number of Spaces Between Fields . . . [1 ]
    Dash Line Separator (Y/N) . . . . . . [N]
```
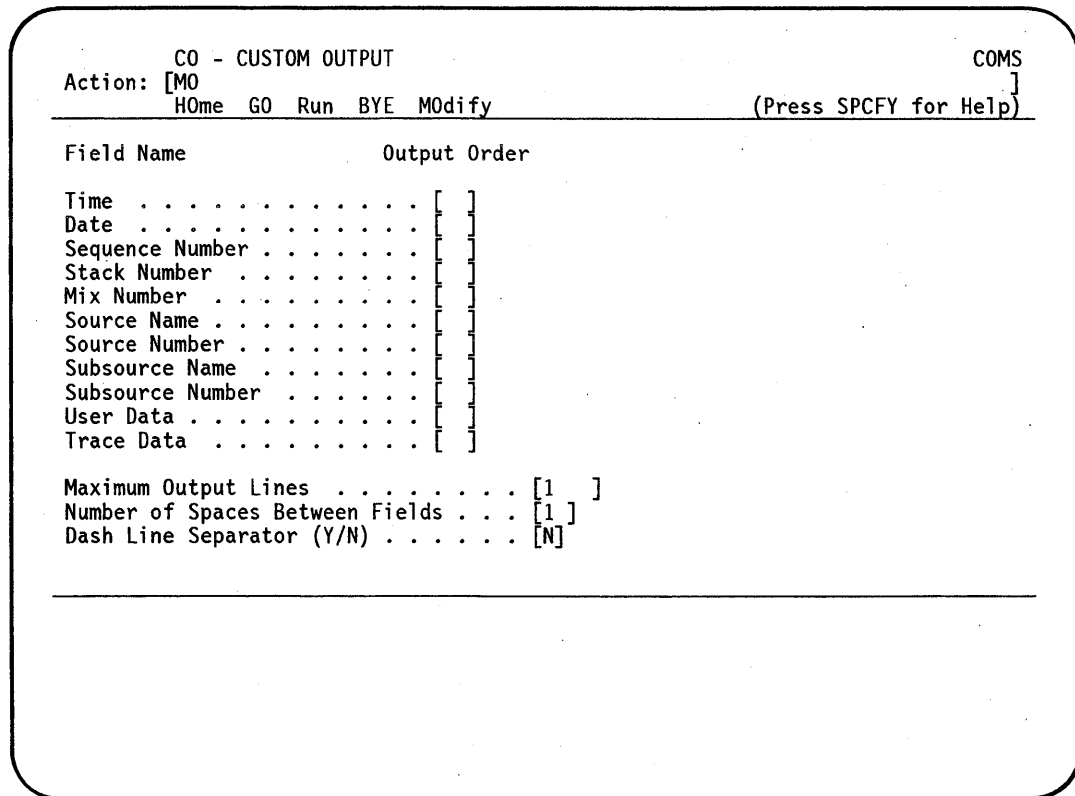
Figure 8–3.   The Custom Output Screen

Field Name and Output Order Selection

The output information (Field Name) fields are listed in their default order on the Custom Output screen. This is the order in which the information is reported if you do not request a custom output format.

Enter a number, 1 through 11, in the appropriate Output Order fields to indicate which output information you want included in your report, and the order in which you want it presented. For example, if you want a report to include the Date, Mix Number, Time, Sequence Number, and User Data information (in this order), enter the numbers 1 through 5 in the following Output Order fields:

- Enter "1" in the Date field

- Enter "2" in the Mix Number field

- Enter "3" in the Time field

- Enter "4" in the Sequence Number field

- Enter "5" in the User Data field

Output Format Selections

After you have specified the information that you want in your report, use the last three fields of the Custom Output screen to make the following format selections:

Field	Description
Maximum Output Lines	Specify the maximum number of output lines that you want in a single trace entry. The default value is 1.
Number of Spaces Between Fields	Specify the number of blank space characters that you want to separate the selected output fields. The default value is 1.
Dash Line Separator	Enter either Y (yes) or N (no) to indicate whether you want to use dash characters for line separators between trace entries. The default is N.

Figure 8–4 shows an example display of an analyzer output report that was prepared using the default output format, except for the two dash line separators. In this example, the top line displays the time, date, sequence number, stack number, and mix number. The second line displays the source name (COMS_DCI), and the subsource name (DCI_CALL). The final field, which has seven lines, is the user data. There is no user data in this example.

```
07:32:50.98  04/20/91     SEQ # 51246000   STACK # 0640   MIX # 0465


COMS_DCI                              DCI_CALL

     1-58  ||DCI CALL PINX= 1 TINX= 2 TWINX= 1 HDR_STATE= 00007000D81B ||
    59-116 ||FUNC= 13 SUBFUNC= 3 CD= 00000000000000000000000330C00000000|
   117-174 |0300000000000000400001100090000000000000000000019D00000000|
   175-232 |00000000000000000000000000000000000000000000000000000000000|
   233-290 |00000000000000000000000000000000000000000000000000000000000|
   291-348 |000000000000000000000000000000000000000000000 TEXT= Tracing||
   349-353 || to f||
```

Figure 8–4. Trace Output Report Display Example

Using the General Selection Options Screen

To display the General Selection Options screen, either select the GSO - General Selection Options choice on the Trace Analyzer Home screen or enter the GO GSO action code in the Action field of another Trace Analyzer. Use this screen to specify the general selection criteria for your analyzer output reports.

As shown in Figure 8–5, you can specify ranges of start and stop times and dates, as well as specific mix, stack, and sequence numbers.

```
          GSO - GENERAL SELECTION OPTIONS                                COMS
   Action: [MO                                                              ]
          HOme  GO  Run  MOdify  BYE                   (Press SPCFY for Help)

   Start Times and Dates

      Times (hhmmss) . . . [      ] [      ] [      ] [      ] [      ]
      Dates (mmddyy) . . . [      ] [      ] [      ] [      ] [      ]

   Stop Times and Dates

      Times (hhmmss) . . . [      ] [      ] [      ] [      ] [      ]
      Dates (mmddyy) . . . [      ] [      ] [      ] [      ] [      ]

   Mix, Stack, Seq Numbers

      Mix Numbers   . . . . [   ] [   ] [   ] [   ] [   ] [   ]
      Stack Numbers . . . . [   ] [   ] [   ] [   ] [   ] [   ]

      Sequence Numbers . . [      ] [      ] [      ] [      ]
```

Figure 8–5. The General Selection Options Screen

The following list briefly describes the option fields of the General Selection Options screen:

Field	Description
Start Times	Enter the start times for the records to be selected. The format is hhmmss, using the 24-hour clock.
Stop Times	Enter the stop times for the records to be selected. The format is hhmmss, using the 24-hour clock.

continued

continued

Field	Description
Start Dates	Enter the start dates for the records to be selected. The format is mmddyy.
Stop Dates	Enter the stop dates for the records to be selected. The format is mmddyy.
Mix Numbers	Enter the mix numbers for the records to be selected. The allowed values are 0 through 9999.
Stack Numbers	Enter the stack numbers for the records to be selected. The allowed values are 0 through 9999.
Sequence Numbers	Enter the sequence numbers for the records to be selected.

Using the Global Trace Options Screen

To display the Global Trace Options screen, either select the GT - Global Trace Options choice on the Trace Analyzer Home screen or enter the GO GT action code in the Action field of another Trace Analyzer screen. As shown in Figure 8–6, you can use this screen to specify the run time, output destination, and formatting options for your analyzer output reports.

```
         GT - GLOBAL TRACE OPTIONS                                    COMS
   Action: [MO                                                           ]
         HOme  GO  Run  BYE  MOdify                  (Press SPCFY for Help)

   Run Time Options
     Trace File Title . . . . . . . [COMS/TRACE/CAPTURE.
                                                                         ]
   Output Destination Options
       Output to Disk (Y/N) . . . . [N]   (Choose only one output option)
                 Disk File Title . . [TRACE/OUT.
                                                                         ]
     Output to Printer (Y/N) . . . . [Y]

   Formatting Options
       Group by Word (Y/N) . . . . . [N]                            ABC
                                                   A B C            CCC
           Hex Format (1/2) . . . . [2]    Format 1: C1C2C3  Format 2: 123

           Print Line Delimiter . . . . [|]
```

Figure 8–6.   The Global Trace Options Screen

The following subsections describe the options you can specify from the Global Trace Options screen.

The Run Time Option

As shown in Figure 8–6, the run time option is the title of the trace file that you want to analyze. Trace files are produced by the trace capture operation that is initiated by the TRACE command. (See "Tracing Diagnostic Data: TRACE Command" in Section 7 of this guide.)

Trace files are written to disk with a file name in the following format:

COMS/TRACE/<mmddyy>/<hhmmss>

In this format, <mmddyy> and <hhmmss> are the date and time that the file was created. Enter the full file name and disk location of the trace capture file that you want to analyze in the Trace File Title field of the Global Trace Options screen. As shown in Figure 8–6, COMS/TRACE/CAPTURE. is the default file title.

Output Destination Options

Use the output destination options to specify whether you want the analyzer output file to be printed or written to disk. As prompted, you can specify either disk or printer, but not both.

The following list briefly describes the Output Destination Option fields of the Global Trace Options screen:

Field	Description
Output to Disk	Enter either Y (yes) or N (no) to specify whether you want the output of the trace file analysis written to disk. The default value is N (no).
Disk File Title	If you entered Y (yes) in the Output to Disk field, enter the file name and disk location for trace analysis output file. As prompted, TRACE/OUT. is the default.
Output to Printer	Enter either Y (yes) or N (no) to specify whether you want the output of the trace file analysis printed. The default value is Y (yes).

Formatting Options

Use the Formatting Options fields to specify the three formatting options for your analyzer output reports. The group-by-word option separates each word group by a blank space character. The hex format options specify either horizontal or vertical presentation of hexadecimal characters. The print line delimiter option allows you to specify the line delimiter character that is used when printing data in raw hex format.

Hex Format

As shown in Figure 8–6, format 1 presents hex characters horizontally as follows:

```
A B C 1 2 3 D E F 4 5 6
C1C2C3F1F2F3C4C5C6F4F5F6
```

Format 2 presents hex characters vertically, as follows:

```
ABC123DEF456
CCCFFFCCCFFF
123123456456
```

Group by Words

For either hex format, the group-by-words option inserts a blank space character between each word group as follows:

Format 1 — Grouped by words:

```
A B C 1 2 3   D E F 4 5 6
C1C2C3F1F2F3 C4C5C6F4F5F6
```

Format 2 — Grouped by words:

```
ABC123 DEF456
CCCFFF CCCFFF
123123 456456
```

The following list briefly describes the Formatting Options fields the Global Trace Options screen:

Field	Description
Group by Word	Enter Y (yes) or N (no) to specify whether you want the output data presented in word groups with a blank space between each group. The default is N (no).
Hex Format	Enter 1 (horizontal) or 2 (vertical) to specify whether you want the output data presented in horizontal or vertical format. The default is 2 (vertical).
Print Line Delimiter	Enter the character that you want to use as a delimiter when printing lines in raw hex format. The default is a single vertical bar character.

Using the Load/Save Options Screen

To display the Load/Save Options screen, either select the LSO - Load/Save Options choice on the Trace Analyzer Home screen or enter the GO LSO action code in the Action field of another Trace Analyzer screen. As shown in Figure 8–7, you can use this screen to either save the current trace options or to load another options file.

Enter the file name and disk location of the trace option file that you want to load or save in the Trace Option File Title field of the Load/Save Options screen. Then, use the appropriate Action field choice to perform the load or save operation.

As shown in Figure 8–7, TRACE/OPTIONS/SAVED. is the default. The Options Saved List displays the options associated with the current trace options file.

```
          LSO - LOAD / SAVE OPTIONS                                      COMS
Action: [                                                                    ]
          HOme  GO  Run  BYE  LOad  SAve              (Press SPCFY for Help)


  Trace Option File Title   [TRACE/OPTIONS/SAVED.
                                                                ]


  Options Saved List

      Custom Output Screen:  All Data

      Global Trace Screen:  Output Destination Options (Except Disk File Title)

                           Formatting Options

  _____
```

Figure 8–7. The Load/Save Options Screen

Using the Source Selection Options Screen

To display the Source Selection Options screen, either select the SS - Source Selection Options choice on the Trace Analyzer Home screen or enter the GO SS action in the Action field of another Trace Analyzer screen. Use this screen and the Subsource Selection Options screen to specify which of the available information sources will be included in your output report.

Figure 8-8 is an example of a Source Selection Options screen. This screen displays all of the available sources of output report information. Scroll through the source list and enter Y (yes) or N (no) in the appropriate fields to specify the information sources that you want to include in your analyzer output report.

```
              SS - SOURCE SELECTION OPTIONS
     Action: [MO
             HOme   GO   Run   BYE   MOdify   NExt   PRev          (Press SPCFY fo

       [N]   COMS_COMMANDS                    [N]   COMS_PERFORM_BREAK
       [N]   COMS_DCWRITES                    [N]   CONNECT_HANDLER
       [N]   COMS_DCRESULTS                   [N]   COMS_TABLE_ENTRY
       [N]   COMS_QUEUES
       [N]   COMS_TASKS
       [N]   COMS_TANK
       [N]   COMS_DCI
       [N]   COMS_INPQ
       [N]   COMS_REMOTE
       [N]   COMS_TAGS
       [N]   COMS_NSP_STUFF
       [N]   ENTITY
       [N]   PROC_ITEM
       [N]   COMS_OUTPQ
       [N]   SEND_MSG
       [N]   CUCI_INBOUND
       [N]   CUCI_OUTBOUND


       Page  1     End Of Source List
```

Figure 8-8. Source Selection Options Screen Example

Using the Subsource Selection Options Screen

To display the Subsource Selection Options screen, either select the the SUS - Subsource Selection Options choice on the Trace Analyzer Home screen or enter the GO SS action in the Action field of another Trace Analyzer screen. Use this screen and the Source Selection Options screen to specify which of the available information subsources will be included in your output report.

Figure 8–9 is an example of a Subsource Selection Options screen. This screen displays all of the available subsources of output report information for each of the information sources that you selected on the Source Selection Options screen. Scroll through the subsource list and enter Y (yes) or N (no) in the appropriate fields to specify the information subsources that you want included in your analyzer output report.

```
         SUS - SUBSOURCE SELECTION OPTIONS                         COMS
Action: [MO                                                            ]
         HOme  GO  Run  BYE  MOdify  NExt  PRev  (Press SPCFY for Help)

        COMS_COMMANDS                    [N]  BREAK_PROG_NOTIFICATION
                                         [N]  BREAK_NEGATIVE_RESPONSE
[N]  SUBTRACT_CMD_IN                      [N]  BREAK_DATA_LOSS
[N]  SUBTRACT_CMD_OUT
[N]  SWAP_CMD_IN                               CONNECT_HANDLER
[N]  SWAP_CMD_OUT
[N]  ON_CMD_IN_NEW                        [N]  ENTER_CONNECT_HANDLER
[N]  ON_CMD_OUT_NEW                       [N]  EXIT_CONNECT_HANDLER
[N]  PASS_CMD_IN_NEW                      [N]  ENTER_ATTACH_REQUEST
[N]  PASS_CMD_OUT_NEW                     [N]  EXIT_ATTACH_REQUEST
[N]  HELLO_CMD_IN_NEW                     [N]  ENTER_DETACH_REQUEST
[N]  HELLO_CMD_OUT_NEW                    [N]  EXIT_DETACH_REQUEST
                                         [N]  CONNECT_HANDLER_LOGIC_ERROR

        COMS_PERFORM_BREAK                      CONNECT_HANDLER

[N]  BREAK_MAIN_PROC
[N]  BREAK_MCS_WINDOWS                    [N]  STATION_TABLE


Page  3     End Of Subsource List
```

Figure 8–9. Subsource Selection Options Screen Example

Appendix A
System Messages

This appendix presents messages, including error messages, that the system displays on terminal screens in response to COMS commands issued by station operators. These system messages are listed in alphabetical order, with the exception that system messages that begin with a variable are listed after the alphabetic listing. An explanation is provided for each message.

Access to that window is denied to you (invalid use).

- You attempted to open or pass text to a window that you are not authorized to access.

- Check with your system administrator to determine whether you are allowed to access this window.

Default window open failed.

- COMS could not open the default window for your station and has placed your station on the MARC/1 window. The default window might be in use by the maximum number of users who can use it, it might be disabled, or the maximum number of tasks might already be running (COMS can run 1,023 tasks; three of them are used by COMS).

- If the default window is disabled, use the ENABLE command to make the window available. Use the STATUS WINDOW command to display the number of users currently accessing the window and the maximum number allowed. Otherwise, close or disable any unneeded windows, or try to issue the command later.

Dialog 1 of the MARC window cannot be closed.

- You attempted to close dialog 1 of the MARC window.

- No response is necessary. You cannot close dialog 1 of the MARC window. However, to log off the MARC window, you can use the BYE command.

Host "<host name>" is not known to the network.

- The name of the remote host system that you specified is not known to the COMS network. Control of your station is retained by COMS.

- Verify that you correctly entered the name of the remote host system. You can use the HN system command to list the remote hosts currently available in the network.

Invalid USERCODE/PASSWORD. Enter USERCODE please.

- The usercode or password you entered is not defined in the USERDATAFILE for the system.

- Enter a valid usercode and password combination, or notify your system administrator that you want this usercode and password combination defined in the USERDATAFILE for the system.

Line <line number> is not a valid line number.

- You have specified a line number that is invalid. The action you requested has not been taken.

- Correct the line number and retransmit the command. You can use the COMS *STATUS* command to display the line number of a particular station.

Login ok; Your current window is <window name>/<dialog number>.

- You have logged on to COMS. In your session, you are currently on the window and dialog indicated in the message.

- No response is necessary.

No free stations (pseudostations) are available at this time. Please try later.

- There are no pseudostations currently available for the MCS window you have specified, or the DATACOMINFO file might be locked by a system program. The action you requested has not been taken.

- Try to issue the command later, finish any IDC sessions, allow more pseudostations to be allocated, or close currently opened or suspended dialogs to any MCS window and issue the command again.

ok

● The action you requested has been taken.

● No response is necessary.

Please log on.

● You attempted to issue commands in a window before you logged on to the window. You must begin a COMS session before you can issue commands.

● Use the HELLO command to log on to the window. You can then issue COMS commands.

Recall rejected. Recall or break already in progress.

● The messages tanked for the specified station are already being retrieved; that is, a RECALL command is already in effect for that station, or the *?BRK* data comm command has been issued for that station. Only one station at a time can recall tanked messages for another station; the *?BRK* command terminates all output to the station. Therefore, the action you requested has not been taken.

● Try to issue the command later.

STATION is unavailable (or invalid) = <station name or LSN> .

● You have specified a station that is not in a state that enables it to be affected by your command, or you have specified an invalid station name or logical station number (LSN). There are There are several possible reasons why the station name or LSN is invalid. One situation could be that the station you are trying to affect is connected to a CP 2000 communications processor, and the command you entered is not valid for such stations. Stations connected to a CP 2000 are controlled by the CP 2000 itself rather than by an MCS; therefore, you cannot use the ADDSTA command (for example, to transfer the station to another line). The action you requested has not been taken for that station.

● Check that you correctly entered the station name or logical station number (LSN) and determine whether the command you are entering is valid for that station. You can display a list of stations that are currently logged on to COMS by using the REPORT command. You can use the STATUS command to display the LSN of a particular station.

The action you have requested cannot be performed.

- You have requested an action that is not enabled for your usercode or usercode and password.

- Contact your system administrator to obtain the necessary privileges.

The destination "<name>" is not a valid destination.

- You have specified a destination (that is, the name indicated in the error message) that is not a valid destination for the command.

- Correct the name and retransmit the command.

The dialog selected, (<dialog number>), is not in the range permitted for that window.

- You have specified a dialog number for a window that is beyond the range of possible dialog numbers for that window. The maximum number of dialogs for a window is defined in the COMS configuration file. The action you requested has not been taken.

- No response is required. If you want more dialogs for the window, contact your system administrator.

The identifier "<text>" cannot be recognized.

- You have entered information that is not recognized by COMS. The action you requested has not been taken.

- Correct the text of the command and retransmit.

The name <database name> is not a valid DATABASE name.

- You have specified a database name that is not recognized by COMS. The action you requested has not been taken.

- Correct the name of the database to one that is defined in the COMS configuration file and retransmit the command.

The name <MCS name> is not a valid MCS name.

- You have specified an MCS name that is not recognized by COMS. The action you requested has not been taken.

- Correct the name of the MCS to one that is defined in the DATACOMINFO file and retransmit the command.

The name "<program name>" is not a valid program name.

- You have specified a program name that is not recognized by COMS. The action you requested has not been taken.

- Correct the name of the program to one that is defined in the COMS configuration file and retransmit the command.

The name <window name> is not a valid WINDOW name.

- You have specified a window name that is not recognized by COMS. The action you requested has not been taken.

- Correct the name of the window to one that is defined in the COMS configuration file and retransmit the command. You can use the WINDOWS command to list the windows currently defined for your system.

The password change you have attempted is not valid.

- You have entered the PASSWORD command incorrectly.

- Correct the syntax of your command as required, and retransmit the command.

The text has been passed to a suspended dialog.

- You have input the text to a window dialog that is suspended (that is, messages from that dialog are being tanked).

- No response is necessary. The suspended dialog has received the message.

**The window <window name> is currently unavailable.
(Associated program is DISABLED.)**

- The window that you specified is a declared remote-file window and its associated program is currently disabled. The window, therefore, is not currently available.

- First, use the Window Activity menu of the COMS Utility to determine the name of the assigned remote-file program. Then, use the COMS *ENABLE PROGRAM* command to enable the program so you can access the window.

The window <window name> is currently unavailable (maximum number of active tasks allowed by COMS already running).

- You attempted to open or pass text to a window when the maximum number of active tasks that can be run is already running (COMS can run 1,023 tasks; three of them are used by COMS).

- You can reduce the number of tasks that are running by closing or disabling unneeded windows, using the CLOSE or DISABLE command.

The window <window name> is currently unavailable (window is full).

- The window that you specified is being used by the maximum number of users who can use it. Therefore, this window is unavailable to you at this time. The action you requested has not been taken.

- Try to issue the command later, or close currently opened or suspended dialogs under other usercodes of the window you specified and issue the command again. You can use the STATUS WINDOW command to display the number of users currently accessing the window and the maximum number of users that can access it at one time.

Use restricted to CONTROL station or CONTROL-capable user.

- The command or command option you entered is only valid for control-capable users or from control-capable stations. The action you requested has not been taken.

- Refer to the appropriate section of this guide for information on restrictions for the command you are issuing.

Window <window name>/<dialog number> cannot be closed at this time; tanked outputs exist.

- You attempted to close a window dialog that has tanked output messages; you cannot close the dialog until you either view all the tanked messages from that dialog or purge them. The window dialog has not been closed.

- To view the messages tanked for the window, you can use the ON or RESUME command. To discard the tanked messages, you can use the PURGE command or the PURGE option of the CLOSE or BYE command.

Window <window name> cannot be resumed (window is not open).

- You have attempted to clear the suspension of messages from a window that is closed at your station. The action you requested has not been taken.

- Because the window you specified is not in a state to send messages, no response is necessary.

Window <window name> cannot be suspended (window is not open).

- You have requested the suspension of messages from a window that is closed at your station. The action you requested has not been taken.

- No response is necessary; there are no tanked messages to suspend.

Window <window name> is not available (DISABLED).

- The window you specified is not available because it is disabled. The action you requested has not been taken.

- Use the ENABLE command to make the window available; then you can open the window or pass text to it.

Window <window name> was not open.

- The window you attempted to close is already closed.

- No response is necessary.

Window <window name>/<dialog number> was already suspended.

- Messages from the window dialog you specified are already being suspended at your station.

- No response is necessary.

Window <window name>/<dialog number> was not suspended.

- You have requested that the suspension of messages from a window dialog be cleared when the messages from that dialog are not being suspended.

- No response is necessary.

You are already on "<window name>/<dialog number>".

- You have requested to be moved to the window dialog that is already your current window dialog.

- No response is necessary. You are currently on the requested dialog.

"<PI library name>" is not a valid LIBRARY name.

- The processing-item library name you specified is not a valid processing-item library name. The action you requested has not been taken; that is, a processing-item library has not been disabled.

- Correct the name of the processing-item library to one that is defined in the COMS configuration file and retransmit the command.

"<Usercode>" is not a valid USERCODE. Please correct the entry and retransmit.

- The usercode you specified with the TO command is not recognized by COMS.

- Correct the usercode to one that is defined in the COMS configuration file and retransmit the command.

Appendix B
Basic Constructs

This appendix defines the variables that appear in the railroad diagrams in this manual. Variables appear in railroad diagrams enclosed in angle brackets (<>). The variables are listed in alphabetical order.

<BNA hostname>

The name of a remote host available through BNA station transfer. A BNA hostname can consist of 1 to 17 alphanumeric characters.

<database name>

The name given to a database defined in the COMS configuration file. A database name can consist of 1 to 17 alphanumeric characters, beginning with a letter.

<declared window name>

The name given to a window defined in the COMS configuration file. Such windows include direct, MCS, and declared remote-file windows. A declared window name can consist of 1 to 17 alphanumeric characters, beginning with a letter.

<dialog number>

A number from 1 to 8, inclusive.

<DL number>

A number in the form <integer1>:<integer2>, where *integer1* is the front-end processor (network support processor) number, and *integer2* is the line number. The line number is computed by multiplying the line support processor (LSP) number by 16 and then adding the adapter number.

<DLS number>

A number in the form <integer1>:<integer2>:<integer3>, where *integer1* is the front-end processor (network support processor) number, *integer2* is the line number, and *integer3* is the station number. The line number is computed by multiplying the line support processor (LSP) number by 16 and then adding the adapter number.

<domain name>

A host name that uses a hierarchical tree structure as a map for routing messages through the domain name system of an IP network. A domain name consists of a string of nodes separated by dots or periods (.). Each node can have from 1 to 63 alphanumeric characters (uppercase and lowercase), hyphens (-), and underscore characters (_). The entire string can have as many as 255 characters, including the separating periods.

<family name>

The name of the logical group of disk packs on which a physical file is located. A family name consists of 1 to 17 alphanumeric characters and is assigned by the installation.

<first password in list>

If more than one password is associated with a usercode, the first password in the list.

<host name>

In the CONNECT command syntax, the <host name> attribute can be either the BNA hostname, the IP address, or the domain name of a remote host.

<IP address>

A designator that uniquely identifies a host within a specific local area network (LAN) or wide area network (WAN) that forms part of an IP network. An IP address consists of exactly four nodes. Each node consists of a numeric string from 0 (zero) to 255. Each node is separated by a dot or period (.), but the IP address is not terminated by a dot.

<LSN>

Logical station number. A unique number assigned in the Network Definition Language II (NDLII) for each station.

<MCS name>

The file name of a message control system declared in the Network Definition Language II (NDLII). An MCS name can consist of 1 to 125 alphanumeric characters.

<new password>

The password that replaces an old password or is added to a list of passwords.

<old password>

The password that is changed or deleted.

<password>

The name of a password defined in the COMS user data file. A password can consist of 1 to 17 alphanumeric characters, or 1 to 17 EBCDIC characters (excluding the quote character) enclosed in quotation marks.

<PI library name>

The name given to a processing-item library defined in the COMS configuration file. A processing-item library name can consist of 1 to 17 alphanumeric characters, beginning with a letter.

<program name>

The name given to a program defined in the COMS configuration file. A program name can consist of 1 to 17 alphanumeric characters, beginning with a letter.

<station list>

The list of stations that is added to, moved to, removed from, or attached to a line specified by the variable DL number; or the list of stations that is enabled, disabled, set to ready, changed to the not-ready status, transferred to another MCS, or purged of tanked messages.

<station name>

The name given to a station in the Network Definition Language II (NDLII). A station name can be composed of up to 14 nodes, separated by slashes (/). Each node must begin with a letter or number, followed by up to 16 characters, including numbers, letters, underscores (_), or hyphens (-).

<target password>

The password that is to be deleted from a list of passwords.

<text>

Any string of characters. You can send up to a full screen of text.

<usercode>

The name of a usercode defined in the USERDATAFILE. A usercode can consist of 1 to 17 alphanumeric characters.

<window name>

The name given to a window defined in the COMS configuration file, or the name of a dynamic remote-file window. A window name defined in the configuration file

can consist of 1 to 17 alphanumeric characters, beginning with a letter. A dynamic remote-file window name is in the form REM<nnnn>, where <*nnnn*> is a unique 4-digit number.

Appendix C
Understanding Railroad Diagrams

What Are Railroad Diagrams?

Railroad diagrams are diagrams that show you the rules for putting words and symbols together into commands and statements that the computer can understand. These diagrams consist of a series of paths that show the allowable structure, constants, and variables for a command or a statement. Paths show the order in which the command or statement is constructed. Paths are represented by horizontal and vertical lines. Many railroad diagrams have a number of different paths you can take to get to the end of the diagram.

Example

```
— REMOVE ─┬──────────────────────────────────────────────────┤
          ├─ SOURCE ─┤
          └─ OBJECT ─┘
```
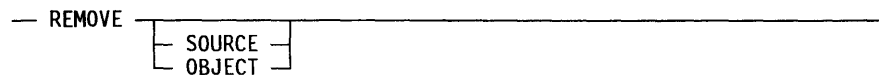
If you follow this railroad diagram from left to right, you will discover three acceptable commands. These commands are

```
REMOVE
```

```
REMOVE SOURCE
```

```
REMOVE OBJECT
```

If all railroad diagrams were this simple, this explanation could end here. However, because the allowed ways of communicating with the computer can be complex, railroad diagrams sometimes must also be complex.

Regardless of the level of complexity, all railroad diagrams are visual representations of commands and statements. Railroad diagrams are intended to

- Show the mandatory items
- Show the user-selected items
- Present the order in which the items must appear
- Show the number of times an item can be repeated
- Show the necessary punctuation

To familiarize you with railroad diagrams, this explanation describes the elements of the diagrams and provides examples.

Some of the actual railroad diagrams you will encounter might be more complex. However, all railroad diagrams, simple or complex, follow the same basic rules. They all consist of paths that represent the allowable structure, constants, and variables for commands and statements.

By following railroad diagrams, it is easy to understand the correct syntax for commands and statements. Once you become proficient in the use of railroad notation, the diagrams serve as quick references to the commands and statements.

Constants and Variables

A constant is an item that cannot be altered. You must enter the constant as it appears in the diagram, either in full or as an allowable abbreviation. If a constant is partially underlined, you can abbreviate the constant by entering only the underlined letters. In addition to the underlined letters, any of the remaining letters can be entered. If no part of the constant is underlined, the constant cannot be abbreviated. Constants can be recognized by the fact that they are never enclosed in angle brackets (< >) and are in uppercase letters.

A variable is an item that represents data. You can replace the variable with data that meets the requirements of the particular command or statement. When replacing a variable with data, you must follow the rules defined for the particular command or statement. Variables appear in railroad diagrams enclosed in angle brackets (< >).

In the following example, BEGIN and END are constants while <statement list> is a variable. The constant BEGIN can be abbreviated since it is partially underlined. Valid abbreviations for BEGIN are BE, BEG, and BEGI.

```
— BEGIN —<statement list>— END ————————————————————————————|
```

Constraints

Constraints are used in a railroad diagram to control progression through the diagram. Constraints consist of symbols and unique railroad diagram line paths. They include the following:

- Vertical bars
- Percent signs
- Right arrows
- Required items
- User-selected items
- Loops
- Bridges

A description of each item follows.

Vertical Bar

The vertical bar symbol (|) represents the end of a railroad diagram and indicates the command or statement can be followed by another command or statement.

```
— SECONDWORD — ( —<arithmetic expression>— ) ————————————|
```

Percent Sign

The percent sign (%) represents the end of a railroad diagram and indicates the command or statement must be on a line by itself.

```
— STOP ————————————————————————————————————————%
```

Right Arrow

The right arrow symbol (>) is used when the railroad diagram is too long to fit on one line and must continue on the next. A right arrow appears at the end of the first line and another right arrow appears at the beginning of the next line.

```
— SCALERIGHT — ( —<arithmetic expression>— , ————————————→
→—<arithmetic expression>— ) ————————————————————|
```

Required Items

A required item can be either a constant, a variable, or punctuation. A required item appears as a single entry, by itself or with other items, on a horizontal line. Required items can also exist on horizontal lines within alternate paths or nested (lower-level) diagrams. If the path you are following contains a required item, you must enter the item in the command or statement; the required item cannot be omitted.

In the following example, the word EVENT is a required constant and <identifier> is a required variable:

```
— EVENT —<identifier>————————————————————|
```

User-Selected Items

User-selected items appear one below the other in a vertical list. You can choose any one of the items from the list. If the list also contains an empty path (solid line), none of the choices are required. A user-selected item can be either a constant, a variable, or punctuation. In the following railroad diagram, either the plus sign (+) or minus sign (-) can be entered before the required variable <arithmetic expression>, or the symbols can be disregarded because the diagram also contains an empty path.

```
———————————<arithmetic expression>————————————|
    ┌─ + ─┐
    └─ - ─┘
```

Loop

A loop represents an item or group of items that you can repeat. A loop can span all or part of a railroad diagram. It always consists of at least two horizontal lines, one below

the other, connected on both sides by vertical lines. The top line is a right-to-left path that contains information about repeating the loop.

Some loops include a return character. A return character is a character (often a comma or semicolon) required before each repetition of a loop. If there is no return character, the items must be separated by one or more blank spaces.

```
   ┌←────── ; ──────┐
───┴─<field value>──┴────────────────────────────────────────┤
```
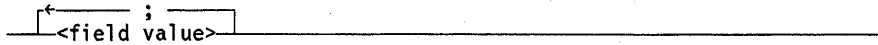
Bridge

Sometimes a loop also includes a bridge, which is used to show the maximum number of times the loop can be repeated. The bridge can precede the contents of the loop, or it can precede the return character (if any) on the upper line of the loop.

The bridge determines the number of times you can cross that point in the diagram. The bridge is an integer enclosed in sloping lines (/ \). Not all loops have bridges. Those that do not can be repeated any number of times until all valid entries have been used.

```
   ┌←────── , ──────┐
───┴─/2\─┬─ LINKAGE ─┬┴──────────────────────────────────────┤
         └─ RUNTIME ─┘
```

or

```
   ┌←─/2\──────────┐
───┴─┬─ LINKAGE ─┬─┴─────────────────────────────────────────┤
     └─ RUNTIME ─┘
```
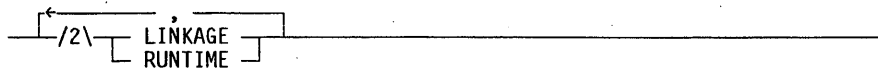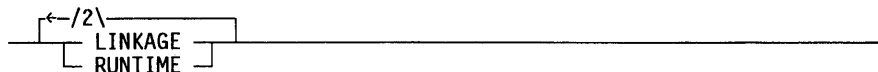
In the first bridge example, you can enter LINKAGE or RUNTIME no more than two times. In the second bridge example, you can enter LINKAGE or RUNTIME no more than three times.

In some bridges an asterisk follows the number. The asterisk means that you must select one item from the group.

```
   ┌←────── , ──────┐
───┴─/1*\─┬─ LINKAGE ─┬┴─────────────────────────────────────┤
          └─ RUNTIME ─┘
```
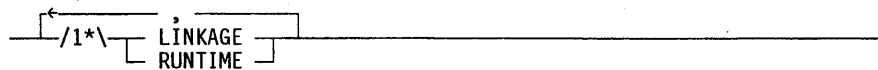
Figure C–1 shows the types of constraints used in railroad diagrams.
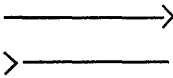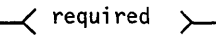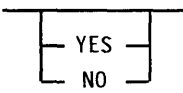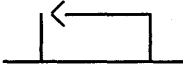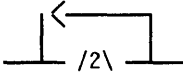
SYMBOL/PATH	EXPLANATION
―――――――――|	Vertical bar. Indicates that the command or statement can be followed by another command or statement.
―――――――― °/o	Percent sign. Indicates that the command or statement must be on a line by itself.
―――――――→ >―――――	Right arrow. Indicates that the diagram occupies more than one line.
―< required >―	Required items. Indicates the constants, variables, and punctuation that must be entered in a command or statement.
― YES ― ― NO ―	User-selected items. Indicates the items that appear one below the other in a vertical list. You select which item or items to include.
loop symbol	A loop. Indicates an item or group of items that can be repeated.
bridge symbol /2\	A bridge. Indicates the maximum number of times a loop can be repeated.

Figure C–1. Railroad Constraints

Following the Paths of a Railroad Diagram

The paths of a railroad diagram lead you through the command or statement from beginning to end. Some railroad diagrams have only one path, while others have several alternate paths. The following railroad diagram indicates there is only one path that requires the constant LINKAGE and the variable <linkage mnemonic>:

— LINKAGE —<linkage mnemonic>―――――――――――――――\|

Alternate paths provide choices in the construction of commands and statements. Alternate paths are provided by loops, user selected items, or a combination of both. More complex railroad diagrams can consist of many alternate paths, or nested (lower-level) diagrams, that show a further level of detail.

For example, the following railroad diagram consists of a top path and two alternate paths. The top path includes an ampersand (&) and the constants (that are

user-selected items) in the vertical list. These constants are within a loop that can be
repeated any number of times until all options have been selected. The first alternate
path requires the ampersand (&) and the required constant ADDRESS. The second
alternate path requires the ampersand (&) followed by the required constant ALTER
and the required variable <new value>.

```
          ┌←──────── , ─────┐
— & ──┬───┬── TYPE ──┬───────┬──────────────────────────────────┤
      │   ├─ ASCII ──┤       │
      │   ├─ BCL ────┤       │
      │   ├─ DECIMAL ┤       │
      │   ├─ EBCDIC ─┤       │
      │   ├─ HEX ────┤       │
      │   └─ OCTAL ──┘       │
      ├─ ADDRESS ────────────┤
      └─ ALTER ──<new value>─┘
```
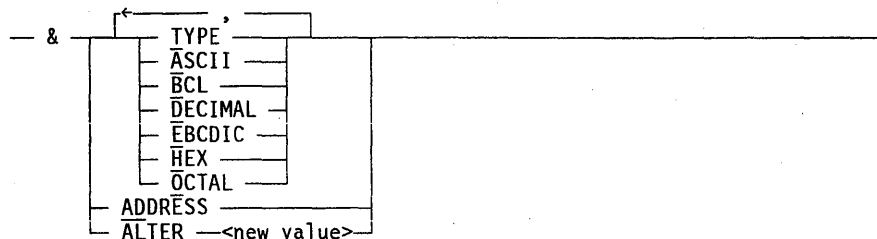
Railroad Diagram Examples

The following examples show five railroad diagrams and possible command and
statement constructions based on the paths of these diagrams:

Example 1

```
<lock statement>
— LOCK — ( — <file identifier> — ) ───────────────────────────┤
```

Sample Input

```
LOCK (F1)

LOCK (FILE4)
```

Explanation

LOCK is a constant and cannot be altered. Because no part of the word is underlined,
the entire word must be entered. The parentheses are required punctuation and F1
and FILE4 are sample <file identifier>s.

Example 2

```
<open statement>
— OPEN ──┬──────────┬──<database name>──────────────────────────┤
         ├─ INQUIRY ┤
         └─ UPDATE ─┘
```
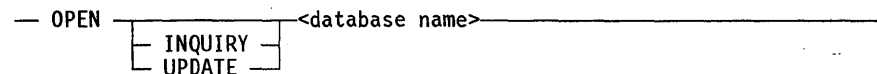
Sample Input

```
OPEN DATABASE1

OPEN INQUIRY DATABASE1

OPEN UPDATE DATABASE1
```

Explanation

The first sample input shows the constant OPEN followed by the variable DATABASE1, which is a database name. The railroad diagram shows two user-selected items, INQUIRY and UPDATE. However, because there is an empty path (solid line), these entries are not required.

The second sample input shows the constant OPEN followed by the user-selected constant INQUIRY and the variable DATABASE1.

The third sample input shows the constant OPEN followed by the user-selected constant UPDATE and the variable DATABASE1.

Example 3

```
<generate statement>
— GENERATE —<subset>— = —┬— NULL ────────────────────────────┤
                          └─<subset>┐
                                ┌─ AND ─┬─<subset>─┘
                                ├─ OR ──┤
                                ├─ + ───┤
                                └─ - ───┘
```
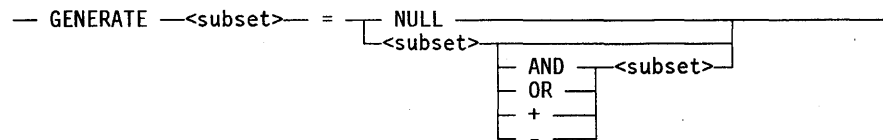
Sample Input

```
GENERATE Z = NULL

GENERATE Z = X

GENERATE Z = X AND B

GENERATE Z = X + B
```

Explanation

The first sample input shows the GENERATE constant followed by the variable Z, an equal sign, and the user-selected constant NULL.

The second sample input shows the GENERATE constant followed by the variable Z, an equal sign, and the user-selected variable X.
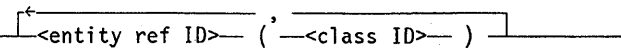
The third sample input shows the GENERATE constant followed by the variable Z, an equal sign, the user-selected variable X, the AND command (from the list of user-selected items in the nested path), and a third variable, B.

The fourth sample input shows the GENERATE constant followed by the variable Z, an equal sign, the user-selectable variable X, the plus sign (from the list of user-selected items in the nested path), and a third variable, B.

Example 4

```
<entity reference declaration>
```

```
                              ┌←──────────── , ─────────────┐
── ENTITY REFERENCE ──┴─<entity ref ID>── ( ──<class ID>── ) ─┴──────────┤
```

Sample Input

```
ENTITY REFERENCE ADVISOR1 (INSTRUCTOR)

ENTITY REFERENCE ADVISOR1 (INSTRUCTOR), ADVISOR2 (ASST_INSTRUCTOR)
```

Explanation

The first sample input shows the required item ENTITY REFERENCE followed by the variable ADVISOR1 and the variable INSTRUCTOR. The parentheses are required.

The second sample input illustrates the use of a loop by showing the same input as in the first sample followed by a comma, the variable ADVISOR2, and the variable ASST_INSTRUCTOR. The parentheses are required.

Example 5

```
  ── PS ── MODIFY ──────────────────────────────────────────→

                ┌←──────────────── , ─────────────┐
  →─┬─┬──────<request number>────────────────────┬─────────────────→
    │ └──<request number>── ─ ──<request number>─┘
    └─ ALL ─┬──────────────────────────────────┘
            └─ EXCEPTIONS ───────────────────

  →──────────────────────────────────────────────────────┤
     ┌─┬──────────────── , ───────────┐
     │ └────────┬───<file attribute phrase>─┬─┘
     │   ┌─ - ─┘                            │
     │   └───────┬───<print modifier phrase>┘
     │     ┌─ - ─┘
     └─────┘
```
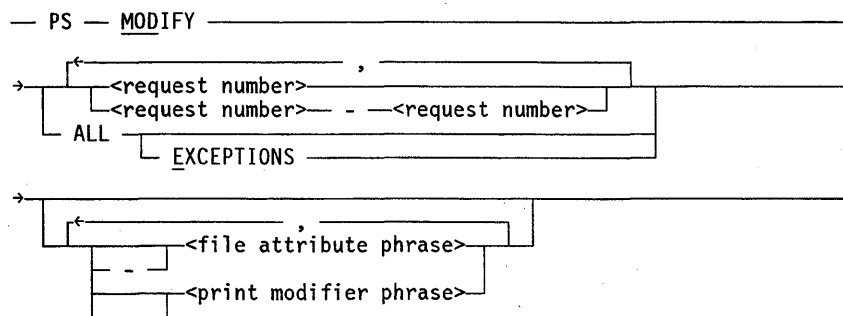
Sample Input

```
PS MODIFY 11159

PS MODIFY 11159,11160,11163

PS MODIFY 11159-11161 DESTINATION = "LP7"

PS MOD ALL EXCEPTIONS
```

Explanation

The first sample input shows the constants PS and MODIFY followed by the variable 11159, which is a <request number>.

The second sample input illustrates the use of a loop by showing the same input as in the first sample followed by a comma, the variable 11160, another comma, and the final variable 11163.

The third sample input shows the constants PS and MODIFY followed by the user-selected variables 11159-11161, which are <request number>s, and the user-selected variable DESTINATION = "LP7", which is a <file attribute phrase>.

The fourth sample input shows the constants PS and MODIFY followed by the user-selected constant ALL, followed by the user-selected constant EXCEPTIONS. Note that in this sample input, the constant MODIFY has been abbreviated.

Glossary

This glossary provides definitions of terms used in this guide. The terms are presented in alphabetical order.

B

back up
> To copy information to a disk or a tape to provide a means of restoring the information on the system as required.

beginning of job (BOJ)
> The control code that signals the receiver that a job is beginning.

beginning of task (BOT)
> The start of processing of a task.

BNA
> The network architecture used on A Series, B 1000, and V Series systems as well as CP9500 and CP 2000 communications processors to connect multiple, independent, compatible computer systems into a network for distributed processing and resource sharing.

BNA station transfer
> The logical transfer of a station from one host system to another through BNA.

BNA Version 2
> A second-generation version of BNA, which uses communications processors such as the CP 2000 for enhanced performance, provides facilities for centralized network administration, and supports multiple types of industry-standard and proprietary networks.

BOJ
> *See* beginning of job.

BOT
> *See* beginning of task.

C

CANDE
> *See* Command and Edit.

central processing unit (CPU)
> The computer hardware unit that controls and executes the instructions contained in object code files.

closed window dialog

A window dialog that has been accessed but with which communication has been severed in the current session at the station.

Command and Edit (CANDE)

A time-sharing message control system (MCS) that enables a user to create and edit files, and to develop, test, and execute programs, interactively.

Communications Management System (COMS)

A general message control system (MCS) that controls online environments on A Series systems. COMS can support the processing of multiprogram transactions, single-station remote files, and multistation remote files.

communications processor data link processor (CPDLP)

A data link processor (DLP) that enables a host running BNA Version 2 software to communicate with local terminals or a wide area network (WAN). A CPDLP provides most of the functions of a CP 2000 communications processor but, unlike a CP 2000, can be connected directly to an I/O base in the host.

COMS

See Communications Management System.

COMS network

A system of interconnected elements consisting of at least one computer system and one or more stations for which the Communications Management System (COMS) provides communication and processing control.

COMS tables

The forms and data that comprise the information defined and maintained by means of the COMS Utility. These forms are included in the Communications Management System (COMS) configuration file.

COMS transaction trail

A file generated by the transaction processor (TP) library that contains such information as beginning of job (BOJ) and end of job (EOJ) records. The file optionally provides a journal of query transactions not associated with any database, and statistical information on a transaction-by-transaction basis, which can be used for security and accounting.

COMS Utility

The Communications Management System (COMS) program that defines and maintains the specifications stored in the COMS configuration file.

COMS window environment

The status of the windows currently available to a given station. The status of a window can be open, closed, suspended, or disabled.

configuration file

A file that contains descriptions of the tables defined through the COMS Utility program. These tables contain information on message routing, security, dynamic program control, and synchronized recovery. This file is also referred to as the COMS CFILE.

control character

(1) Any extra transmitted character used to control or facilitate data transmission over communication networks or between data terminal equipment (DTE) units. (2) A character whose occurrence in a particular context initiates,modifies, or stops a control operation. Such a character can be recorded for use in a subsequent action; it can have a graphic representation.

control station

A control-capable station; that is, a station with no restrictions on the use of COMS commands. A control station is defined in one of three ways: through the COMS Utility, in the Network Definition Language II (NDLII), or through the Interactive Datacomm Configurator (IDC) to set its station attribute SPO to TRUE.

control-capable user

A user with no restrictions defined by the COMS Utility on the use of COMS commands.

CPDLP

See communications processor data link processor.

CPU

See central processing unit.

CP 2000

See CP 2000 communications processor.

CP 2000 communications processor

A data communications processor (DCP) that provides communications interfaces to local area networks (LANs) and wide area networks (WANs), including BNA Version 2 and Transmission Control Protocol/Internet Protocol (TCP/IP) networks. The CP 2000 also provides connections to terminals controlled by BNA Version 2 software.

current window dialog

In the Communications Management System (COMS), the access to the program environment that is now viewed at the station.

D

data comm

See data communications.

data communications (data comm)

The transfer of data between a data source and a data sink (two computers, or a computer and a terminal) by way of one or more data links, according to appropriate protocols.

data communications interface (DCI) library

A library that serves as the direct programmatic interface to the Communications Management System (COMS). Application programs must communicate with COMS through the DCI library to use agendas, processing items, routing by trancode, and synchronized recovery.

Data Management System II (DMSII)

A specialized system software package used to describe a database and maintain the relationships among the data elements in the database.

database (DB)

An integrated, centralized system of data files and program utilities designed to support an application. The data sets and associated index structures are defined by a single description. Ideally, all the permanent data pertinent to a particular application resides in a single database. The database is considered a global entity that several applications can access and update concurrently.

database (DB) library

See DB library.

DB library

The data communications interface (DCI) library for programs that are controlled by a common database (DB) control program.

DCI library

See data communications interface (DCI) library.

default window

The window that the Communications Management System (COMS) makes the current window for a usercode when the user logs on or uses the asterisk (*) option in the ON command during a session.

diagnostic data

The data consisting of records that identify each activity performed by the Communications Management System (COMS). The kinds of data desired and the stations for which the data are to be traced are designated through the various options of the TRACE command.

dialog

See window dialog.

disabled database

A database in which all programs that have been declared as using a given database through the COMS Utility are terminated and made unavailable to users.

disabled library

A library, associated with the given Communications Management System (COMS) library name, that is canceled.

disabled program

In the Communications Management System (COMS) architecture, a program that has been made incapable of receiving and processing input.

disabled station

A station that has been made incapable of normal communication with COMS.

disabled window

The condition in which all the programs in the given window are made unavailable to users.

DLS number

A construct made up of three numbers, each separated by a colon (:). The first number is the relative network support processor (NSP) number, which was previously the data communications processor (DCP) number. The second number is the line number. The third number is the relative station number within the line.

DMSII

See Data Management System II.

E

EBCDIC

Extended Binary Coded Decimal Interchange Code. An 8-bit code representing 256 graphic and control characters that are the native character set of most mainframe systems.

enabled database

A database in which all programs that have been declared as using the given database through the COMS Utility are made available to users.

enabled program

A program that has been made capable of receiving and processing input.

enabled station

A station that has been made capable of normal communication with COMS.

enabled window

A window that has been made available to users.

end of file (EOF)

A code at the end of a data file that signals that the last record in the file has been processed.

end of job (EOJ)

The control code that signals the receiver that a job has completed.

end of task (EOT)

The termination of processing of a task.

EOF

See end of file.

EOJ

See end of job.

EOT

See end of task.

G

GEMCOS
> *See* Generalized Message Control System.

Generalized Message Control System (GEMCOS)
> A message control system (MCS) developed for online systems. GEMCOS is transaction oriented.

H

hex
> *See* hexadecimal.

hexadecimal (hex)
> Pertaining to the base 16 numbering system. Decimal digits 0 through 9 are represented by the characters 0 through 9. Decimal digits 10 through 15 are represented by the characters A through F.

HLCN
> *See* Host LAN Connection.

host
> An independent system in a network. Each host has its own operating system and resources and is identified by a hostname.

Host LAN Connection (HLCN)
> (1) A Unisys product that provides direct connectivity between A Series systems and workstations by means of a Novell® NetWare® local area network (LAN). (2) A support library used with the Host LAN Connection (HLCN) product.

host system
> *See* host.

J

job queue
> A structure in the system software that stores a list of jobs that have been compiled and are waiting to be initiated.

L

library
> A collection of one or more named routines or library objects that are stored in a file and can be accessed by other programs.

LINC II

    See Logic and Information Network Compiler II.

line support processor (LSP)

    The data communications subsystem processor that manages communication with the host and initiates processes that control the input of messages to and the output of messages from data communications lines.

log off

    The process by which a user ends the current message control system (MCS) session.

log on

    The process by which a user starts a message control system (MCS) session. The user identifies himself or herself as a legitimate user of the system by entering a valid usercode/password and, in some cases, a valid chargecode and accesscode. (In addition, an accesscode can have an associated password of its own.)

Logic and Information Network Compiler II (LINC II)

    A fourth-generation software development tool that enables programmers to create application programs at less cost and up to 10 times faster than by conventional programming methods.

logical station number (LSN)

    A unique number assigned to each station in a network and each pseudostation allocated by a message control system (MCS). Each station has an LSN assigned according to the order in which the stations are defined.

LSN

    See logical station number.

LSP

    See line support processor.

M

MARC

    See Menu-Assisted Resource Control.

master control program (MCP)

    The central program of the A Series operating system. The term applies to any master control program that Unisys may release for A Series systems.

MCP

    See master control program.

MCS

    See message control system.

Menu-Assisted Resource Control (MARC)

    A menu-driven interface to A Series systems that also enables direct entry of commands.

message
> Any information-containing data unit, in an ordered format, sent by means of a communications process to a named network entity or interface. A message contains the information (text portion) and controls for routing and handling (header portion).

message control system (MCS)
> A program that controls the flow of messages between terminals, application programs, and the operating system. MCS functions can include message routing, access control, audit and recovery, system management, and message formatting.

message suspension
> The withholding of messages from given window dialogs during a session at a station. While message suspension is in effect, messages from the dialogs are not displayed.

monitor options
> The activities — for example, beginning of job (BOJ) or LOGON — that can be set by means of the MONITOR command so that records of these activities are displayed at all monitor stations and, optionally, printed or written to disk.

monitor station
> A station that has been defined to display COMS activities specified as monitor options.

N

NDLII
> *See* Network Definition Language II.

network
> A system of interconnected elements consisting of at least one computer system and one or more stations.

Network Definition Language II (NDLII)
> The Unisys language used to describe the physical, logical, and functional characteristics of the data communications subsystem to network support processors (NSPs), line support processors (LSPs), and data communications data link processors (DCDLPs).

network shutdown
> The condition in which all windows in the Communications Management System (COMS) network are disabled, stations that transferred into COMS from another message control system (MCS) are returned to that MCS, and COMS goes to end of job (EOJ).

network support processor (NSP)
> A data communications subsystem processor that controls the interface between a host system and the data communications peripherals. The NSP executes the code generated by the Network Definition Language II (NDLII) compiler for line control and editor procedures. An NSP can also control line support processors (LSPs).

not-ready station
> A station that is not polled for input and cannot receive messages.

NSP

See network support processor.

O

ODT

See operator display terminal.

open window dialog

A window dialog that is accessed in the current session at a station.

operator display terminal (ODT)

A terminal or other device that is connected to the system in such a way that it can communicate directly with the operating system. The ODT allows operations personnel to accomplish system operations functions through either of two operating modes: system command mode or data comm mode.

P

POF

See protected output file.

processing-item library

A user-written ALGOL library containing a set of procedures called processing items. A processing-item library can be called only by the COMS Agenda Processor library to preprocess and postprocess messages as they are received and sent by programs.

protected dialog

A dialog on a protected window, which has the protected output feature enabled.

protected output feature

A feature that enables output messages to be written to a disk file and then sent to their destinations only after successful completion of the transaction.

protected output file (POF)

A disk file that contains protected output messages. These messages are sent to their destinations after a transaction has been completed.

protected window

A window that has the protected output feature enabled.

protocol-specific handler (PSH)

A library that provides the necessary procedures for communication between the Communications Management System (COMS) and specific types of networks. Generally, one PSH exists for each supported communications protocol.

PSH

See protocol-specific handler.

Q

queue

A data structure used for storing objects; the objects are removed in the same order they are stored.

queue insert

The placement of a message or job into a queue.

queue remove

The transfer of a message or job out of a queue.

R

ready station

A station placed by the COMS READY command in a state such that it will be polled for input.

recovery

Reconstruction of a database after a system failure.

remote host system

The computer system that contains the message control system (MCS) to which a given station is connected, but that is not the system to which the station is physically connected.

RSVP message

A message the system displays for a suspended process that states the reason the process was suspended. RSVP messages ask for a reply such as *OK* or *DS*.

S

Semantic Information Manager (SIM)

The basis of the InfoExec™ environment. SIM is a database management system used to describe and maintain associations among data by means of subclass-superclass relationships and linking attributes.

SIM

See Semantic Information Manager.

suspended window

A window open at a station for which incoming messages are tanked.

synchronized recovery

A function that resubmits incomplete transactions to the database after a transaction-state abort, system crash, or rollback occurs. This COMS function is called

---

InfoExec is a trademark of Unisys Corporation.

synchronized recovery because it reprocesses transactions in the same order that they were originally processed by multiple programs running asynchronously, even if the transactions were conflicting.

T

tanked messages

Incoming messages that are being deferred from display at a station because the associated window is suspended.

Terminal Transport Protocol (TTP)

A Unisys internal communications protocol used to transport terminal information and data between the CP 2000 communications processor and an A Series or V Series host.

TP library

See transaction processor (TP) library.

trace

To write to a disk or a printer a record of all COMS activities of designated kinds performed that involve designated stations.

trace options

The kinds of COMS activity for which the tracing can be set or discontinued by means of the COMS *TRACE* command.

transaction processor (TP) library

The data communications interface (DCI) library for application programs that use the Communications Management System (COMS).

transaction trail

A file maintained by a Communications Management System (COMS) database (DB) library that contains a series of time-ordered transactions that can be reapplied to the database to provide synchronized recovery in the event of a transaction-state abort, system crash, or rollback. The file can also be used to provide a journal of both query and update transactions for security auditing, accounting, and statistical reporting. Each DB library has its own transaction trail.

TTP

See Terminal Transport Protocol.

U

USERDATAFILE

A system database that defines valid usercodes and contains various data about each user (such as accesscodes, passwords, and chargecodes) and the population of users for a particular installation.

W

WFL

See Work Flow Language.

window

The concept that enables a number of program environments to be operated independently and simultaneously at one station. One of the program environments can be viewed while the others continue to operate.

window dialog

A particular access to a program environment through a COMS window at a station. The exact number of window dialogs allowed at one time for a given window depends on the constraints established through the COMS Utility. No more than eight window dialogs are allowed at one time for any window. Each dialog has an identifying number within its window.

Work Flow Language (WFL)

A Unisys language used for constructing jobs that compile or run programs on A Series systems. WFL includes variables, expressions, and flow-of-control statements that offer the programmer a wide range of capabilities with regard to task control.

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Index

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                                                 (   )

Title   **Company**

Address

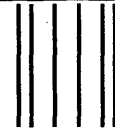**City**   **State**   **ZIP code**

Tape

Do Not Staple
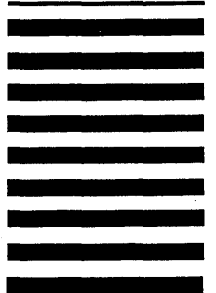
Please Fold and Fasten

Tape

Fold here

NO POSTAGE
NECESSARY IF
MAILED IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS   PERMIT NO. 817   DETROIT, MI 48232

Postage Will Be Paid By Addressee

Software Product Information
Unisys Corporation
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Mission Viejo, CA 92691-9826 USA