PUBLICATIONS UPDATE

System 80

OS/3
Interactive Services
Operating Guide

UP-9972 Rev. 1-A

This Library Memo announces the release and availability of Update A to the *System 80 OS/3 Interactive Services Operating Guide*, UP-9972 Rev. 1.

This guide is a standard library item (SLI). It is part of the standard library provided automatically with the purchase of the product.

This guide describes the procedures used to communicate with the Unisys Operating System/3 (OS/3) interactively through a local workstation or remote terminal. It describes the dual-mode nature of the workstation, the messages the user receives at the workstation, and the system-supplied menus. It explains how the user can log on and log off, change job scheduling, and connect a workstation to a job. It describes the commands that control the job processing environment, control spooling, perform utility routines, and control workstation logging.

This update provides an index and a set of tab breakers. The content of the manual is unchanged.

Copies of Update A are now available. You can order the update only, or the complete manual with the update, through your local Unisys representative. To receive only the update, order UP-9972 Rev. 1-A. To receive the complete manual, order UP-9972 Rev. 1.

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MBW, MBV0, MB00,
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(20 pages plus Memo)

Library Memo for
UP-9972 Rev. 1-A

February 1989

UNISYS

PUBLICATIONS REVISION

System 80

OS/3
Interactive Services
Operating Guide

UP-9972 Rev. 1

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For Release 12.0, this guide documents changes to the ASK command, the STATUS F command, the STATUS T command, the SET IS command, and changes to various commands reflecting global control and global status privileges. There are also minor technical and editorial changes.

Destruction Notice: This revision supersedes and replaces the *OS/3 Interactive Services Commands and Facilities User Guide/Programmer Reference*, UP-9972, released on Library Memo dated February 1984. Please destroy all copies of UP-9972, all updates, and Library Memos.

Additional copies may be ordered through your local Unisys representative.

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OS/3
Interactive Services
Operating Guide

OS/3 Release 12.0

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Correspondence regarding this publication should be forwarded, using the User Comments form at the back of this manual or remarks addressed directly to Unisys Corporation, to E/MSG Product Information, P.O. Box 500, M.S. E5-114, Blue Bell, PA 19424 U.S.A.

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About This Guide

Purpose

This guide is provided to help you use the interactive services of Unisys Operating System/3 (OS/3).

Scope

This guide can serve as a reference manual, to be kept with your workstation for ready use. It can also help you to familiarize yourself with the interactive commands, the procedures for initializing the interactive services and using the workstation, and interactive facilities such as the HELP function.

Audience

The intended audience is the system administrator and the workstation operator.

How to Use This Guide

Read the entire guide to familiarize yourself with the basic concepts it presents; then use it for reference as needed.

Organization

This guide is divided into the following:

- **Part 1. Using Interactive Services at a Workstation**

  Section 1. Communicating with Interactive Services and the System

  This section describes the two modes in which interactive services operate. Gives general information about the LOGON and LOGOFF commands and procedures, entering commands, and responding to messages at the workstation.

- **Part 2. Interactive Services Commands**

  Section 2. Running Jobs from the Workstation

  This section describes the procedures for running jobs from a workstation, including an explanation of interactive job control, the commands used to schedule and run jobs from the workstation, the EXECUTE facility, and the concept of a master workstation.

  Section 3. General Workstation Commands

  This section describes the commands used to control job execution, run utility routines, and control the spooling process from the workstation.

- **Part 3. A Guide to Other Interactive Products**

  Section 4. Quick-Reference Guide to the Interactive Facilities, Distributed Data Processing, BASIC, and ESCORT™

  This section provides reference information on the use of the interactive data utilities, the interactive dump/restore utility, the general and RPG II editors, the COBOL editor, the error file processor, screen format services, menu services, distributed data processing, and the interactive programming languages: BASIC and ESCORT.

- **Part 4. Appendixes**

  Appendix A. Interactive Terminals

  This appendix describes the different procedures used when accessing the OS/3 interactive services from the workstation, System 80 console workstation, UNISCOPE® 100 and 200 terminals, and UTS 400 terminals. It includes the standard terminal dialog of the ICAM (Integrated Communications Access Method) terminal support facility.

  Appendix B. Workstation Commands

  This appendix presents a quick reference to the interactive commands and their formats.

  Appendix C. Sample Workstation Sessions

  This appendix presents four sample workstation sessions, each showing the interactive commands being used to accomplish a typical system task.

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Appendix D. Positional Format for File Parameters

This appendix explains the usage of the positional format to specify command file parameters.

Appendix E. Function Key Summary

This appendix lists the function keys used by the various interactive facilities.

Related Product Information

The following Unisys documents may be useful in understanding and implementing the OS/3 interactive services.

Note: *Throughout this guide, when we refer you to another manual, use the version that applies to the software level at your site.*

Job Control Programming Guide (UP-9986)

This guide describes OS/3 job control and explains how to use it.

Spooling and Job Accounting Operating Guide (UP-9975)

This guide describes, for the system administrator, basic spooling concepts, input and output spooling functions, remote spooling capabilities, and general spooling controls. This guide also explains how to initialize and recover the spool file, and how to produce job accounting reports.

System Messages Reference Manual (UP-8076)

This is a quick-reference manual that lists and describes the messages that can occur for OS/3.

Screen Format Services Technical Overview (UP-9977)

This overview describes how you can move information easily through your computer system using the OS/3 screen format services.

General Editor (EDT) Operating Guide (UP-9976)

This guide describes the commands and procedures used with the OS/3 general editor.

Report Program Generator II (RPG II) Editor Operations Guide (UP-9981)

This guide explains how an RPG II programmer can use the RPG II editor to create and maintain RPG II source programs interactively from a workstation.

ESCORT Programming Language Programming Guide (UP-8855)

This guide describes how to write programs using the ESCORT programming language.

COBOL Editor (COBEDT) Programming Guide (UP-9974)

This guide explains how to interactively create and modify COBOL source programs.

BASIC Programming Reference Manual (UP-9168)

This guide describes how to write programs using the BASIC programming language.

Distributed Data Processing Programming Guide (UP-8811)

This guide describes distributed data processing and the corresponding products, including the DDP transfer facility and the DDP file access.

Consolidated Data Management Programming Guide (UP-9978)

This guide describes consolidated data management and how it moves data between peripheral devices and programs.

Data Utilities Operating Guide (UP-8834)

This guide explains how to execute data utilities interactively and as a batch job. Data utilities are used to reproduce and maintain data files on disks, diskettes, and tapes.

Installation Guide (UP-8839)

This guide provides the system administrator with the information and procedures he or she needs to install, tailor, and maintain OS/3 software in a System 80 environment.

System Service Programs (SSP) Operating Guide (UP-8841)

This guide describes the system service programs and explains how to use them. The system service programs are utility programs that support the operation and organization of the operating system, including the SAT and MIRAN librarians, the linkage editor, disk, tape, and diskette prep routine and various copy routines.

Security Maintenance Utility Operations Guide (UP-12028)

This guide describes how the system administrator can enforce system security by controlling access to the system's interactive services.

Menu Services Technical Overview (UP-9317)

This guide describes the OS/3 menus and explains how to use them with assembly COBOL, RPG II, and FORTRAN IV programs.

Local Workstation - System 80 Operator Reference (UP-8910)

This guide provides an operational description of the workstation, 0797 and 0798 printers, and magnetic stripe reader. It illustrates and describes keyboard, controls, and indicators for the workstation, and describes the keyboard control keys.

Universal Terminal Systems 400/4000 (UTS 400/4000) to OS/3 Interface User Guide/Programmer Reference (UP-8611)

This manual explains how the experienced programmer can create programs to run on the UTS 400/4000.

UNISCOPE Display Terminal Operator Reference (UP-7788)

This guide provides operating information for the UNISCOPE 100 and 200 display terminals and the model 610 tape cassette. It lists and describes operator controls and indicators, keyboard control keys, and format keys. It also includes operating procedures for the tape cassette for read/write sequences, search, and other procedures.

Universal Terminal System 400 (UTS 400) Operator's Guide (UP-8358)

This guide describes operator duties for using the UTS 400, including the operator controls for the keyboard and panel. It also describes screen displays in all applications, and how to use the tape cassette, diskette subsystem, printers, and magnetic stripe reader.

Notation Conventions

The conventions used to illustrate the commands presented in this guide are as follows:

- Underscoring of part of a command or parameter indicates that the command or parameter may be abbreviated, and only the underscored portion must be entered. However, you may enter the entire command or parameter; it will execute properly. When a command or parameter is not underscored, you must enter the entire command or parameter. In the following example, ER of the ERASE command is underscored. You must enter at least ER for the command to execute; but you may enter ERA, ERAS, or ERASE and the command will execute properly.

  <u>ER</u>ASE

- Parameters printed in lowercase letters designate undefined variables.

```
VSN = volume
```

- Parameters that are optional are enclosed in brackets.

```
ERASE [WRPASS = wp]
```

- Alternate choices for a parameter are enclosed in braces.

```
[ENTER DEVICE= {nnn}]
[              {RDR}]
```

Note: *Brackets and braces* cannot *be entered as part of the commands; they are used only to denote optional parameters and alternate parameter choices.*

- Default values are values automatically generated by the system when you do not specify a value for a parameter. Default values are shown shaded in each command format.

```
DISPLAYΔSPL [, {ALL}]
            [  {LOG}]
```

- You are permitted to enter commands and parameters in either uppercase or lowercase letters. The system accepts either uppercase or lowercase in all but a fev special instances. When you are restricted to either uppercase or lowercase letters, a note informing you of this will be included.

- Spaces are indicated by a delta (Δ) symbol.

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Section 1
Communicating with Interactive Services and the System

1.1. General

The workstation is the principal means by which you and the system communicate. Using the workstation, you can perform almost every function available on the OS/3 system. You can use the workstation to write a source program, compile and debug it, create a job control stream to run the program, and actually run the program. Through the workstation, you can also use the interactive facilities to make your data processing tasks easier and more efficient.

The interactive commands are the means by which you use the workstation to perform various system tasks. Therefore, the bulk of this manual is concerned with describing the interactive commands. To help you understand how to use the various interactive commands to do real work on the system, Appendix C of this guide contains four sample workstation sessions, showing how the interactive commands work together to perform tasks. There are examples given with each interactive command to help you understand them.

Note: *In this guide, you will encounter the term "workstation" a great deal. For purposes of this guide, we define a workstation as the terminal through which you use the OS/3 interactive services. Included in this definition are the workstation itself (UTS 20/20D, UTS 40/40D, or SVT 1122/23/24), UNISCOPE terminals, UTS 400 terminals, and the System 80 console workstation. These are all used in essentially the same way to communicate with the system. The differences in their operation are covered in Appendix A.*

This section covers the procedures you use to communicate with the interactive services, and through them, the system in general. Included are procedures for logging on to the system, entering commands, responding to messages, and using the two operational modes of the workstation. Also included are procedures for attaching locally-connected workstations to programs using the Integrated Communications Access Method (ICAM). One of these programs is the Unisys Information Management System (IMS).

Note: *On System 80 workstations and console workstations, an alternate character set (besides English) is available. It is the Katakana character set, specified when you generate your system. If you use the Katakana character set, no lowercase-to-uppercase translation may be performed.*

1.2. The Dual-Mode Nature of the Workstation

The workstation operates in two modes: WORKSTATION mode and SYSTEM mode. These two modes facilitate the use of the workstation as both a data transfer device for program input and output and as a control device to control processing.

1.2.1. WORKSTATION Mode

WORKSTATION mode makes the whole screen available to the user for data entry and output to user-created and system programs. To use WORKSTATION mode for data transfer, it must be connected to the program requesting or supplying the data. Connection is most often accomplished through job control (2.11).

The CONNECT command is available to connect WORKSTATION mode to a job that does not automatically connect workstations through job control. System programs requiring WORKSTATION mode automatically connect the WORKSTATION mode of the workstation from which they are invoked.

When data is output to your workstation by a program, enough data is output to fill your workstation screen. When the screen is full, the system tells the program to stop data output. Data output will not resume until you indicate that it should. There are different ways of resuming data output, depending on the type of terminal you are using as a workstation. Refer to Appendix A for detailed information on the use of each type of terminal.

When WORKSTATION mode is not connected to a job, it serves to display commands entered at the workstation, as well as any output produced by those commands. See 1.5 for a complete description of this aspect of the WORKSTATION mode function.

1.2.2. SYSTEM Mode

SYSTEM mode serves two functions. First, it is the mode used for entering unsolicited commands into the system. It is also the mode used to respond to system and program-generated messages.

SYSTEM mode uses two lines of the screen to display messages and accept responses. When you switch from WORKSTATION mode to SYSTEM mode, any data on these two lines of the screen is saved in a buffer. The lines are cleared and SYSTEM mode is able to use them. Messages are displayed on line 2 of the system input area. You enter message responses and unsolicited commands on line 1 of the system input area.

When WORKSTATION mode is not connected to a job, you must still enter SYSTEM mode to enter commands and respond to messages. You still use line 1 of the system input area to enter commands (the cursor automatically positions itself at the first character position of line 1). However, the rest of the screen is available for the display of messages or command output. If a command produces a message requiring a response, you always enter your response on line 1 of the system input area.

1.2.3. Switching between Modes

You can switch between WORKSTATION and SYSTEM modes to enter commands and respond to messages. The system can also prompt you to switch from WORKSTATION to SYSTEM mode if it has a message waiting to be displayed to you.

Since SYSTEM mode requires the top two lines of the workstation display, when you switch from WORKSTATION mode to SYSTEM mode, any data present on the top two lines of the screen is removed. The System 80 workstation and console workstation save the two lines of data, while the other terminals (the UNISCOPE 100 and 200 and UTS 400) do not save the data removed by the mode switch. Therefore, if you are working with a terminal which does not save the data, be careful when you switch from WORKSTATION to SYSTEM mode. The loss of the two lines of data could produce serious errors in some system and user programs. Consider waiting to acknowledge the message until you have finished with the contents of the screen.

The following command moves the emulated system mode facility from the top two lines of the screen to the bottom two lines of the screen:

```
SCREEN SI=BOTTOM
```

The command to return the system input lines to the top of the screen (the default) is:

```
SCREEN SI=TOP
```

These commands do not take affect immediately, but only after the SYSTEM mode is requested again.

These commands allow the switching to SYSTEM mode without causing an SF16 error because the top two lines are destroyed. An SF16 error can also occur if the cursor is transmitted from the bottom two lines of the screen, as SI=BOTTOM destroys the bottom two lines.

When WORKSTATION mode *is not* connected to a job or system program, the workstation will automatically be switched back from SYSTEM mode to WORKSTATION mode. This permits the use of the entire workstation screen for the display of command output.

When WORKSTATION mode *is* connected to a job or system program, you must manually return to WORKSTATION mode after you have completed your tasks in SYSTEM mode. The system does not permit you to return to WORKSTATION mode, however, if a message requiring a response has not been answered.

Each type of terminal has a different procedure for switching between modes. For information on the correct procedure for the terminal you use, see Appendix A.

1.3. Initializing the Workstation

Before you can use either mode of the workstation, you must prepare it for operation. This involves entering the LOGON command.

1.3.1. LOGON Procedure

Every time you use the workstation, you must begin by entering the LOGON command. The LOGON command serves a variety of purposes. Through its parameters, you are identified to the system as a legitimate user, and the scope of your activities on the system is defined.

The logon bulletin supplies you with information about the operation of your system. In addition, a workstation log file is maintained that consists of system messages, your responses, and all the commands you issued during your workstation session. Included in the workstation log file are accounting records that keep track of things like the amount of computer time you used. The logon procedure also lets you specify whether or not you want a printed listing of the workstation log file when your workstation session is finished.

When the workstation completes the power-on confidence test and requests that you log on, it is in WORKSTATION mode. In order to log on using the LOGON command, the workstation must be in SYSTEM mode. When you are in SYSTEM mode, you may enter the LOGON command as detailed in 1.3.2. To send your LOGON command to the system for processing, press the XMIT key when you have completed entry of the command.

If you are unfamiliar with the format of the LOGON command or with the procedure for entering the LOGON command, the system will help you. Press the XMIT key (it isn't necessary to get into SYSTEM mode). The screen will display a menu listing the parameters of the LOGON command and providing spaces in which to enter the parameters.

The system bulletin is displayed if you leave YES in the spaces following OPTIONS: BULLETIN. If you do not wish to see the system bulletin, overwrite YES with NO. The log is printed if you leave YES in the spaces following LOG. In order to suppress the log, overwrite the YES with NO. Just enter your user-id, account number, password (if these have been supplied to you by your system administrator).

The system has automatically entered LOGON and is ready to receive the information supplied by the parameters you enter in the menu. When you have completed entry of your logon information, press XMIT again to send the logon information to the system. The logon menu looks like this:

```
                    OS/3 INTERACTIVE CONTROL SYSTEM

LOGON IDENTIFICATION:             USER-ID               >______<
                                  ACCOUNT NUMBER           >____<
                                  PASSWORD             >        <

                                  EXECUTION PROFILE:   >________<

OPTIONS:                          BULLETIN                 >YES<
                                  LOG                      >YES<
                                  NEW PASSWORD         >        <
```

The following screen shows the logon menu screen filled in with sample parameters:

```
                    OS/3 INTERACTIVE CONTROL SYSTEM

LOGON IDENTIFICATION:             USER-ID               >ANDY__<
                                  ACCOUNT NUMBER           >____<
                                  PASSWORD             >0339    <

                                  EXECUTION PROFILE:   >PAYROLL_<
OPTIONS:                          BULLETIN                 >YES<
                                  LOG                      >YES<
                                  NEW PASSWORD         >        <
```

Note: *The password is not visible when you log on at any of the following terminals:*

UTS 30	*SVT 1120*
UTS 40	*SVT 1122*
UTS 40D	*SVT 1123*
UTS 400	*SVT 1124*
PC	*BTOS*

You can change the default values that appear on the screen for the BULLETIN and LOG logon parameters using the SET IS console command.

Format

```
SET IS, ⎧BULLDEF⎫
        ⎪BULLOVR⎪  ⎧YES⎫
        ⎨WLOGDEF⎬ ,⎩NO ⎭
        ⎩WLOGOVR⎭
```

The *BULLDEF* parameter lets you specify whether YES or NO appears as the default on the logon screen for the bulletin query. The *WLOGDEF* lets you specify the default for the log query. These are also valid for a user who logs on in batch mode or does a smart logon from system mode.

The *BULLOVR* parameter lets you specify whether or not the interactive services user logging on can change the value on the bulletin query that appears as a default. The *WLOGOVR* parameter lets you specify whether the user can change the default value on the log query. If it is set to NO, the user cannot change the value. If he tries to change it, the following message is displayed:

```
IS136 USER NOT ALLOWED TO CHANGE BULLETIN AND/OR LOG VALUES
```

The user will still be logged on (if there are no other logon errors). These also apply to batch logons and smart logons.

1.3.2. The LOGON Command

The following is the format of the LOGON command:

```
LOGONΔuser-id[,acct][,password][,exec-pro] ⎡,BULLETIN= ⎧NO ⎫⎤⎡,LOG= ⎧NO ⎫⎤
                                           ⎣           ⎩YES⎭⎦⎣      ⎩YES⎭⎦

  [,NEWPASS=new-password]
```

Parameters

`user-id`
: Is a 1- to 6-character alphanumeric code you enter to identify yourself to the system. The user-id is used by the system to correctly route messages, job and command output, and to determine which commands you may use on the system. The user-id must begin with an alphabetic character.

`acct`
: Is a 1- to 4-character alphanumeric code that is used for system time accounting.

`password`
: Is a 1- to 8-character alphanumeric code that controls your access to the overall system.

exec-pro

Specifies an execution profile attached to your user-id. Execution profiles are a series of commands that are automatically executed by the system when you log on under a particular user-id. A typical use of an execution profile would be to go directly from LOGON to the general editor. Each user profile can have a default execution profile, which will be invoked if none is specified with the LOGON command. The default can also be *no* execution profile. A user-id may have any number of different execution profiles, but the system must know them as legitimate for the user-id. The system administrator controls which execution profiles may be invoked by different user-ids. To specify an execution profile, you enter the name assigned to the execution profile. In the sample menu screen in 1.3.1, the execution profile is named PAYROLL.

BULLETIN= $\left\{\begin{array}{l}\text{NO}\\ \text{YES}\end{array}\right\}$

Specifies whether or not you wish to see the system bulletin after your LOGON command has been accepted. The system bulletin is a display of one or more lines detailing current operational information, such as hours of operation, or peripherals in or out of service. If you do not specify that you *do not* wish to see the system bulletin, it will be displayed. The default can be changed using a SYSGEN parameter and a SET command.

LOG= $\left\{\begin{array}{l}\text{NO}\\ \text{YES}\end{array}\right\}$

Specifies whether or not you want the log of workstation commands and messages printed when you conclude your workstation session. See 3.5 for more information on workstation logging. Accounting records are included at the end of the workstation log file. Therefore, if you suppress printing of the log file, you also suppress printing of the accounting records. (Interactive accounting is discussed in detail in 1.8.1.) The default can be changed using a SYSGEN parameter and a SET command.

NEWPASS=new-password

Specifies the new logon password (1- to 8-character alphanumeric code) that you must use for all subsequent logons. This parameter lets you change the logon password without having the security administrator do it for you. When the new password is transmitted, it replaces the existing password in your user profile.

Notes:

1. *If you enter the LOGON command and you omit one of the first four positional parameters, you must enter a comma for that parameter. For example, if you enter LOGON with a user-id and password but no account number, it would be entered like this:*

   ```
   LOGON USERA,,SECRET
   ```

   You do not need to enter additional commas between the last positional parameter you enter and the first keyword parameter. The system can discern keyword parameters from the positional parameters preceding it.

2. *You may not continue the LOGON command on a second line. If you need more than 60 characters, use the logon menu instead.*

Example

```
LOGON BILLP,4789,BULLETIN=NO,LOG=NO
```

In this example, a user has logged on with the user-id BILLP and the account number 4789. The system bulletin is not displayed because BULLETIN=NO is specified. The workstation log won't be printed at the end of the workstation session because LOG=NO is specified.

The following conditions could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command parameters were entered improperly.

- Insufficient Resources

  The system does not have sufficient resources available to support another interactive user.

- Nonunique User-id

  Another user is already logged on the system with the user-id you entered in your LOGON command. Each user must have a *unique* user-id.

If your LOGON command is not accepted, the following message will be displayed on the screen:

```
IS23 INVALID FORMAT FOR THE LOGON COMMAND, REENTER LOGON
```

The workstation will have been shifted back to WORKSTATION mode to display this message. In order to retry the LOGON command, you must again enter SYSTEM mode, or, to see the menu screen, press the XMIT (or TRANSMIT) key. Reenter the LOGON command on the first line of the screen. The incorrect LOGON command will remain on the first line of the workstation screen if it is rejected.

1.3.3. The LOGON ACCEPTED Display

When your LOGON command is processed and accepted by the system, you will see a display, rolling up from the bottom of the screen, informing you that your LOGON is accepted, and the system bulletin if you so specified. The following is a typical LOGON ACCEPTED display:

```
                OS/3 INTERACTIVE SERVICES
71 LOGON003 LOGON ACCEPTED AT 12:45:39 ON 80/01/28. REV. 8.2
72 LOGON003 TODAY'S BULLETIN IS:
73 LOGON003 *******************************************************
74 LOGON003 * SYSTEM WILL BE AVAILABLE FROM 09:00 TO 17:00 TODAY *
75 LOGON003 *******************************************************
```

If your site administrator does not provide a bulletin, the system will display the default bulletin. The default bulletin contains instructions for entering commands to the system. The following display shows the default bulletin.

```
72 LOGON003 IS27 TODAYS BULLETIN IS:
73 LOGON003      -- TO TYPE IN COMMANDS,  DEPRESS 'FUNCTION' AND --
74 LOGON003      -- 'SYSTEM MODE' KEYS SIMULTANEOUSLY, THEN TYPE --
75 LOGON003      -- THE COMMAND AND DEPRESS TRANSMIT.            --
76 LOGON003      -- ON UNISCOPES DEPRESS 'MESSAGE WAITING' KEY.  --
```

1.4. System-Supplied Menus

After your LOGON command is accepted, your workstation may display a menu, requesting that you select a system function. This is the first of a series of menus supplied by Unisys to aid you in relating to and using the interactive facilities of OS/3.

The menus allow you to select the system function you need. Through help displays, they assist you in understanding the different system functions.

The Unisys standard menus are displayed to you after logging on, provided the MENU command is present in your execution profile. If the menus are not displayed, you may see them by entering:

```
MENU
```

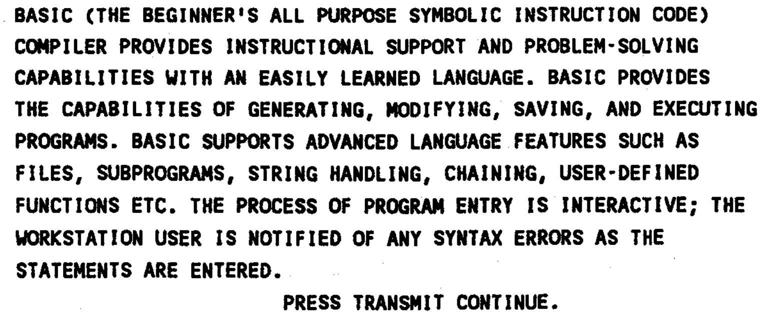
The following is an illustration of the first of the menus supplied by Unisys:

```
                         SYSTEM MENU: OS301

          1. RUN A JOB                        3. END MENU
          2. PERFORM A SYSTEM FUNCTION        4. LOGOFF

  FOR HELP ON A PARTICULAR ITEM NUMBER, ENTER A QUESTION MARK
  FOLLOWED BY THE ITEM NUMBER (?N).  HELP FOR THE ENTIRE DISPLAY
  CAN BE ACQUIRED BY ENTERING A QUESTION MARK(?) THEN PRESSING
  TRANSMIT.

                         ENTER SELECTION: 2
```

Making certain selections on this menu causes other menus to be displayed, giving you further choices of system facilities. For example, we've selected item 2 PERFORM A SYSTEM FUNCTION on the previous menu screen, causing the following menu to be displayed.

```
                  SYSTEM FUNCTION MENU:  OS314

    1.* DATA UTILITIES                        7.* EDITOR
    2.* BASIC                                 8.  JCL DIALOG
    3.* SCREEN FORMAT GENERATOR               9.  SYSGEN DIALOG
    4.* MENU GENERATOR                       10.  HARDWARE UTILITIES (HU)
    5.* RPG EDIT                             11.  RETURN TO SYSTEM MENU
    6.* ESCORT
    * OPTIONAL SOFTWARE. CONTACT YOUR UNISYS MARKETING OFFICE
                                         ENTER SELECTION __
```

If you don't understand a selection on a menu, you can call for a help screen to explain the function. For example, we indicated in the screen, via the question mark and number 2, that we want help with the BASIC interactive programming language. The following screen is thereby displayed:



```
BASIC (THE BEGINNER'S ALL PURPOSE SYMBOLIC INSTRUCTION CODE)
COMPILER PROVIDES INSTRUCTIONAL SUPPORT AND PROBLEM-SOLVING
CAPABILITIES WITH AN EASILY LEARNED LANGUAGE. BASIC PROVIDES
THE CAPABILITIES OF GENERATING, MODIFYING, SAVING, AND EXECUTING
PROGRAMS. BASIC SUPPORTS ADVANCED LANGUAGE FEATURES SUCH AS
FILES, SUBPROGRAMS, STRING HANDLING, CHAINING, USER-DEFINED
FUNCTIONS ETC. THE PROCESS OF PROGRAM ENTRY IS INTERACTIVE; THE
WORKSTATION USER IS NOTIFIED OF ANY SYNTAX ERRORS AS THE
STATEMENTS ARE ENTERED.
                       PRESS TRANSMIT CONTINUE.
```

OS314E

Some menu selections provide multiple help screens. When you have finished with the first screen or when you want to return to the menu, just press the TRANSMIT key.

Note: *You can also create your own menus via menu services. (See Section 4 for a brief overview of menu services.) To call user-created menus, see the MENU command (3.4.13).*

1.5. Entering Commands at the Workstation

Commands may be entered only when the workstation is in SYSTEM mode. When you enter SYSTEM mode, the cursor will be repositioned at the first character position of the first line. You enter commands on this line of the bottom or the screen. (See Section 1.2.3.)

If WORKSTATION mode is connected to a job or system program, any output generated by commands will be displayed on the second line of the workstation, the system message line. Output is displayed one line at a time. You must press the XMIT (TRANSMIT) key after each line is displayed to see the next line of the display.

When WORKSTATION mode is *not* connected to a job or system program, entering commands requires a slightly different procedure. You may still enter commands only when the workstation is in SYSTEM mode. However, after you have entered a command, the system will switch back into WORKSTATION mode and use the entire screen to display command output. The command you entered on the first line will be redisplayed (*echoed*) on the bottom line of the screen. Output from a command will roll up from the bottom line of the screen. If the output is longer than the screen capacity, the system will continue to roll up the output, with the first lines of output being rolled off the second line of the screen and lost. If this happens, you can stop the output by switching to SYSTEM mode and viewing the output one line at a time. If you remain in WORKSTATION mode to view the output, you must return to SYSTEM mode before you can enter another command.

If a command is unacceptable, the system responds with an error message informing you why the command is unacceptable. This message can be either a NAK (negative acknowledgment) message or a prefixed message. NAK messages appear in the last 14 character positions of the system message line. The up-to-12-character message is bracketed by blink characters (∆ ∆). Prefixed error messages and NAK messages can be found, with explanations of their meaning and actions to be taken, in the *System Messages Operations Reference Handbook,* UP-8076.

1.5.1 What You Can Control and Display

You can control and display the status of the jobs running under your user-id. If you have been given global control privileges by the system administrator, you can control and display the status of *all* jobs currently running on the sytem. If you have been given global status privileges by the system administrator, you can display the status of *all* jobs currently running on the system. For more information, see the *Security Maintenance Utility Operations Guide*, UP-12028.

1.6. Messages at the Workstation

Messages are generated by commands, system programs, and users for the purpose of user-system and user-program communication. Messages are divided into three categories. The first is output messages, which are produced by the system, system programs, commands, or user programs. These messages provide you with information, direct you to take some action, or ask a question requiring your response. The second is solicited input messages. These are messages you enter in response to an output message requiring a response. The third category is unsolicited input messages. These are messages you enter that are not in response to an output message.

The message "Workstation Mode Full. Continue?" is generated only when requested. When the MSG WAIT indicator is lit while you are listing an EDT module:

- If you press MSG WAIT, the terminal switches to SYSTEM mode and displays the waiting message.
- If you press a function key to continue or terminate the listing, the continuation message is not displayed.

1.6.1. Output Messages

Output messages are displayed on the second (system message) line of the workstation. They are in the following format:

```
nn⎧?⎫⎧jobname     ⎫ message-text
  ⎨Δ⎬⎩symbiont-id⎭
  ⎩*⎭
```

where:

nn

Is a 2-digit message-id. Message-ids are consecutively assigned to output messages. They begin with the number 11 and end with 99. Once the system reaches message 99 the count begins over again starting with 11. Message-ids are used together with a jobname or symbiont-id to explicitly identify each message in the system. When an output message requires a reply, you must prefix your answer with the message's message-id.

?

Identifies an output message that must be answered before the job, command, or system program that issued the message can continue. If the WORKSTATION mode of your workstation is connected to a job, and you have switched to SYSTEM mode to receive messages, you may *not* return to WORKSTATION mode until all messages requiring responses have been answered.

Δ

Identifies an output message that requires no reply or action. It is displayed for your information only. Input messages, solicited and unsolicited, must have a space between the message-id and the message text.

*

Identifies an output message that requires some action be taken. Execution pauses for the job that produced the message. You must issue a GO command to reactivate the job (see 3.2.6).

`jobname`
: Is the name of the job sending you the message. It can be from 1 to 8 characters long.

`symbiont-id`
: This id identifies which symbiont is sending you a message. The complete id is six characters long. The first two characters identify the actual symbiont sending the message. The next four characters are the task number. The system assigns task numbers to uniquely identify each task the symbiont is performing.

`message-text`
: The actual message content. Message texts may be a maximum of 120 characters. If the message is longer than 120 characters (as in some messages generated by the COBOL and RPG II compilers), the message is truncated.

Note: *If the message is prefixed with a* C, *it is a system console message.*

1.6.2. Solicited Input Messages

Solicited input messages are messages you enter in response to an output message requiring a reply (question mark immediately follows message-id). The format for solicited input messages is:

```
nnΔmessage-text
```

where:

`nn`
: Is the message-id of the message you're responding to.

`message-text`
: Is the actual text of the reply.

Note: *If the message is prefixed with a* C, *it is a system console message.*

1.6.3. Unsolicited Input Messages

Unsolicited input messages are those messages you enter that are not in response to an output message requiring a reply. The format for unsolicited messages is as follows:

```
⎧00Δsymbiont-id      ⎫  Δmessage text
⎨00Δsymbiont-id(did) ⎬
⎪00Δsymbiont-name    ⎪
⎩UNSΔjobname         ⎭
```

where:

`00`
Specifies that the unsolicited message is for a symbiont.

`UNS`
Specifies that the unsolicited message is for a user job.

`symbiont-id`
Is the 2-character symbiont id used to call the symbiont receiving the message. For example, PR is the symbiont-id for the output writer.

`symbiont-id(did)`
Is the 2-character symbiont-id plus the channel address for the device used or controlled by a specific copy of the symbiont in main storage. For example, PR(160) is the symbiont identification of the output writer using the printer at device address 160.

`symbiont-name`
Is the actual 8-character name of the symbiont receiving the message. For example, SL$$OW00 is the symbiont name of the output writer.

`jobname`
Is the name of the user job receiving the unsolicited message.

`message-text`
Is the actual text of the message. It may be up to 80 characters long.

Note: *If you had been using the workstation for data entry before you changed modes to respond to the message, be sure the last screen of data you were working with was transmitted to the system. The audible alarm will sound once when the XMIT key is pressed and data transfer is not successful.*

1.6.4. Restoring Response Messages (REBUILD Command)

During your use of the workstation, especially in WORKSTATION mode, you may inadvertently clear the screen while there is an outstanding message requiring a response. A command is available to restore messages requiring a response or a GO command to the screen. The REBUILD command erases your screen and reconstructs any outstanding response messages in the system for your workstation.

Format

```
REBUILD
```

There are no parameters associated with this command.

If you have lost a message, or *think* you have lost a response message, key in RE. Your workstation screen will clear, and if there are any outstanding response messages, they will be redisplayed to you.

1.7. Connecting Local Workstations to ICAM User Programs

Some of the system programs of the OS/3 operating system interface with users through terminals connected by the Integrated Communications Access Method (ICAM). One of these system programs is the Information Management System (IMS). You can access such ICAM-connected programs from a directly connected (local) workstation by logging on, entering SYSTEM mode, and issuing the standard ICAM terminal sign-on command, $$SON. When you have finished with the program, enter SYSTEM mode, and issue the ICAM terminal sign-off command, $$SOFF. For complete information on the ICAM sign-on and sign-off commands, see Appendix A.

1.8. The LOGOFF Command

When you have finished all the tasks you want to do with the system and are ready to end your workstation session, enter the LOGOFF command. If you enter LOGOFF while one of the interactive facilities (such as the general editor) is running, the LOGOFF command will be rejected.

If you enter this command from a terminal connected through ICAM, your session will be ended and another user may log on. You must enter the ICAM sign-off command ($$SOFF) before the terminal will be released. See Appendix A for information on the ICAM sign-off command.

Any programs you initiated that are running and that do not require the workstation for input or output purposes will continue to run, with messages directed to the system console.

Format

```
LOGOFF
```

There are no parameters associated with this command. It may not be abbreviated.

The following conditions may cause this command to be rejected:

- Functions Still in Use

  You may not log off the workstation if an interactive services function you called from the workstation is still running.

- Workstation Is Reserved

  The workstation is either allocated or reserved for a job.

- Unanswered Messages

  You have not answered all the messages requiring a response sent to your workstation.

- Incorrect Syntax

  The command was misspelled or not entered in its entirety, or the command was entered with parameters appended.

If your LOGOFF command is not accepted by the system, the following message will be displayed:

```
23 LOGOF005 IS74 LOGOFF IGNORED, WORKSTATION IS STILL IN USE
```

When your LOGOFF command is accepted by the system, the following message will be displayed:

```
32 LOGOF005 IS73 LOGOFF ACCEPTED AT __:__:__ON __/__/__
```

The blank spaces show the time (hh:mm:ss) and date (yy/mm/dd) of logging off.

In addition, after your logoff is accepted, a listing of the workstation log file for your workstation session is printed (unless you specified LOG=N when you logged on or unless you generated your system without workstation logging through the SYSGEN parameter, CONSOLOG). Refer to 1.3.1 for more information.

Your workstation log automatically shows all the commands you entered while in system mode. If you want your log to include commands entered both in system and workstation mode (EDT commands, for example), you can specify that with the LOG parameter of the SCREEN command (3.2.8).

The OS/3 ...PLEASE LOGON screen display appears again until the workstation is shut off or signed off from ICAM, or until another user logs on.

1.8.1. Interactive Accounting

Accounting information is maintained for every workstation session. When you log off, this information is summarized and added to the end of your workstation log file. These accounting records appear as the last four messages on the workstation log file listing you get when you log off. (If you specified LOG=N when you logged on, you do not get a listing of account records, although the system still accumulates the records. See 1.3.1.)

Accounting records list such things as CPU time used, the number of files you used, and the number of commands you issued. Here is a sample accounting listing:

Section 2
Running Jobs from the Workstation

2.1. Introduction

This section describes the method you use to run jobs from the workstation. A job can be either a series of programs you have created, or an interactive facility supplied by Unisys. A job occupies a job slot, and is scheduled and executed by either the RUN/RV or SC/SI commands.

The first step in running a job on OS/3 is the creation of a job control stream. The job control stream carries information to the system about the job, such as which files are used by the job. You can create job control streams interactively by using the job control dialog.

When you have created your job control stream, it may be stored on the job control stream library file ($Y$JCS) or an alternate file of your designation. You may also store job control streams or job control procedures (jprocs) on $Y$JCS or an alternate file by using the FILE command, discussed later in this section.

To run your job, the system must first read the job control stream you created for the job. After it has read the job control stream it must expand any job control procedures (jprocs) in the job control stream. A job control procedure is a series of job control statements, represented in a job control stream by a single statement. When a jproc is expanded, the single statement is replaced by the series of statements it represents. The system then schedules your job for execution so that all the system resources it needs will be available to it and finally executes it. This entire process is handled by the RUN/RV and SC/SI command processors.

When your job control stream is read, your job is scheduled for execution by being placed on a job scheduling queue, where it waits its turn for system resources. There are three job scheduling queues available for use based on the priority of your job. They are *preemptive* for jobs that must run immediately, *high* for jobs that must run as soon as possible, *normal* for jobs that can run whenever the necessary system resources are available and *low* for jobs that run only when the other queues are empty. These priorities are discussed in more depth in connection with the RUN and SI commands. While your job is waiting in a scheduling queue for execution, you may change its scheduling queue. You may defer it from being scheduled for execution, reinstate it in a scheduling queue for execution, or remove it entirely from the scheduling queue. You may also produce a display of the contents of the three job queues to check on the progress of your job through the queue. The BEGIN, CHANGE, HOLD, DELETE, and DISPLAY commands explained in 2.10.1 through 2.10.5 allow you to perform these functions.

2.2. The Job Control Dialog

You use the job control dialog to interactively build job control streams. Through menu screen displays, you are offered choices of statements needed to create a job control stream. The system prompts you through every step of creating a job control stream, tailored to the specific needs of your job.

You initialize the job control dialog by entering the RV command with the jobname JC$BLD; thus:

```
RVΔJC$BLD
```

When you enter this command, your workstation screen clears, and a display appears introducing the job control dialog:

```
PROGRAM=            DIALOG FOR JOB CONTROL

THIS DIALOG PREPARES A JOB CONTROL STREAM OR PROCEDURE(JPROC).  FOR AN
EXPLANATION OF THE DIALOG PROCESS, ENTER 'HELP' IN THE SPACE PROVIDED. ____
```

If you choose to go on, and do not require an explanation of the dialog process, another screen will be displayed, the actual beginning of the job control dialog:

```
JOB CONTROL MODULE TYPES:

USE THIS MENU TO SELECT THE TYPE OF MODULE TO BE PREPARED:

1.  JOB CONTROL STREAM

2.  USER WRITTEN JOB CONTROL PROCEDURE (JPROC)

3.  HELP

SELECT ITEM BY ENTERING A NUMBERΔ__
```

If you need an explanation of the types of modules to be prepared, enter the number 3 in the space provided, as shown in the preceding illustration. Entering HELP will cause the following two screens to be displayed, explaining what a job control stream and JPROC are:

```
IN ORDER TO EXECUTE ANY JOB, IT IS NECESSARY TO CONVEY TO THE COMPUTER EXACTLY
WHAT YOU WANT TO DO, AND WHAT RESOURCES (PRINTER, READER, DISKS, ETC) ARE
NEEDED. THIS IS ACCOMPLISHED THROUGH THE USE OF JOB CONTROL. THERE ARE TWO
TYPES OF JOB CONTROL MODULES. THE COLLECTION OF JOB CONTROL STATEMENTS USED TO
RUN A JOB IS CALLED A JOB CONTROL STREAM, SOMETIMES REFERRED TO AS THE JOB
STREAM OR CONTROL STREAM. IN IT, THERE MAY BE JOB CONTROL STATEMENTS, CALLS TO
SYSTEM SUPPLIED PROCEDURES, AND THE SECOND TYPE OF MODULE - USER-WRITTEN
PROCEDURES (JPROCS).

PUSH TRANSMIT KEY TO PROCEED
```

```
JOB CONTROL PROCEDURES HAVE TWO PARTS - THE DEFINITION AND THE CALL. THE
DEFINITION IS THE JPROC MODULE CREATED BY THE DIALOG. THE CALL IS A STATEMENT
IN THE CONTROL STREAM WHICH HAS THE JPROC NAME AS THE COMMAND, AND PROVIDES ANY
NECESSARY PARAMETERS. THE JPROC CALL IS USED AS AN ABBREVIATION TO PREVENT
CODING THE DEFINITION MANY TIMES. WHEN THE CONTROL STREAM IS PROCESSED, EACH
CALL IS REPLACED BY THE APPROPRIATE DEFINITION WHICH HAS BEEN PUT AT THE
BEGINNING OF THE STREAM OR STORED IN A SYSTEM FILE ($Y$JCS). THE RESULT IS THE
SAME AS IF THE DEFINITION HAD BEEN CODED INSTEAD OF THE CALL.

PUSH TRANSMIT KEY TO PROCEED
```

The dialog continues as you enter information, make choices from menus, and receive help as you need it. When you have completed a job control stream, it is stored in the job control stream file, $Y$JCS, or an alternate file you can specify.

Note: *This section is written to give you an overview of job control and building job control streams interactively. For detailed information, refer to the* OS/3 Job Control Programming Guide, *UP-9986.*

2.3. Filing Job Control Streams (FILE Command)

The FILE command files jobs and jprocs, read from an input device to the permanent job control stream library file ($Y$JCS) or to an alternate SAT library file.

Format

```
FILE {([did],label)} Δ [ { :alt-filename                                          } ]
     {(RDR,label)  }   [ { :(alt-filename,  {RES} )                               } ]
                       [ {  (                {RUN} )                              } ]
                       [ {  (                {vsn} )                              } ]
                       [ {                                                        } ]
                       [ { :(alt-filename, [{RES}] ,write-pass)                   } ]
                       [ {  (              [{RUN}]            )                   } ]
                       [ {  (              [{vsn}]            )                   } ]
```

Parameters

`([did],label)`

Specifies a diskette volume from which the job control stream or jproc is read. *did* is a 3-digit hardware address that specifies the drive on which the diskette is mounted. The first digit is the channel number; the second and third digits are the actual hardware address. *did* is usually physically displayed on the device it represents. *label* specifies the name of the diskette data set containing the job control stream or jproc that is being filed. The diskette must have been recorded in data set label mode. The record size must be 128 bytes or less. The records must be unblocked and unspanned. *This parameter must be enclosed in parentheses.*

Note: *For more detailed information on* did, *refer to the OS/3* Installation Guide, *UP-8839.*

`(RDR,label)`

Specifies that the job control stream or jproc you wish to store is located in a subfile of the input spool file. RDR specifies that the job control stream or jproc is located on the input spool file. *label* specifies the name of the subfile containing the job control stream or jproc. *This parameter must be enclosed in parentheses.*

Note: *A file in the reader queue can be accessed only once. So once you execute the file command, you can no longer access the file from the reader queue.*

`:alt-filename`

Specifies the name of the alternate file, residing on the SYSRES disk, that is to receive the job control stream or jproc. The alternate file must have been allocated as a SAT file. If the alternate file is cataloged, you need only enter the name of the alternate file; the volume serial number for the file found in the catalog is used. You specify only the name of the file if no password is needed to write to the file. If you do not specify an alternate file, the job control stream or jproc will be filed in $Y$JCS.

$$: \left(\texttt{alt-filename,} \begin{Bmatrix} \texttt{RES} \\ \texttt{RUN} \\ \texttt{vsn} \end{Bmatrix} \right)$$

Specifies the name of the alternate file *and* identifies a volume serial number for the file. The alternate file must have been allocated as a SAT file. The alternate library file may reside on either a disk, or a diskette recorded in format label mode. If you want the alternate file to reside on the SYSRES disk, specify *RES*. If you want the alternate file to reside on the $Y$RUN disk, specify *RUN*. If you want the file to reside on another volume, specify the volume serial number for the volume. The volume serial number may be from one to six characters long. If another file with the same file name is in the catalog, the volume serial number you enter with the command distinguishes between the two files and overrides the catalog volume serial number. There must not be a password for the alternate file specified in the catalog.

$$: \left(\texttt{alt-filename,} \left[\begin{Bmatrix} \texttt{RES} \\ \texttt{RUN} \\ \texttt{vsn} \end{Bmatrix} \right] \texttt{,write-pass} \right)$$

Specifies the name of the alternate file, a volume serial number if needed or wanted, and a password, identified in the catalog, required to write to the alternate file. The alternate file must have been allocated as a SAT file. The volume serial number is specified as before. If you do not enter a volume serial number, the one listed in the catalog will be used.

Note: *You may not use the FILE command to access an actual card reader. You may use spooled readers only.*

Examples

```
FILE(320,MYJOB)
```

This command files a job control stream named MYJOB to $Y$JCS on SYSRES. The stream is stored on a diskette mounted on the device whose channel and address are 320. When the file command has successfully filed the stream, the user sees this message:

```
JC26 MYJOB   FILED ON REL082 IN $Y$JCS
```

In this example, the volume serial number of the SYSRES disk is REL082.

```
FILE(321,MYJOB)  :(MYFILE,RES)
```

This command files a job control stream named MYJOB to an alternate file named MYFILE on SYSRES. The stream is stored on a diskette whose channel and address are 320. When the file command has successfully filed the stream, the user sees this message:

```
JC26 MYJOB   FILED ON REL082 IN MYFILE
```

In this example, the volume serial number of the SYSRES disk is REL082.

```
FILE(RDR,MYJOB2)
```

This command files a job control stream named MYJOB2 to $Y$JCS on SYSRES. This stream is stored on the reader queue in the input spool file. When the file command has successfully filed the stream, the user sees this message:

```
JC26 MYJOB2   FILED ON REL082 IN $Y$JCS
```

In this example, the volume serial number of the SYSRES disk is REL082.

2.4. Running Jobs (RUN/RV Commands)

The RUN/RV commands cause the job control stream associated with your job to be read and expanded, and your job to be scheduled for execution. The RUN command reads job control streams from the $Y$JCS library file, an alternate job control library file, a data set label diskette, or the input spool file. You use the RUN command when the job requires card-image input, either from a data set label diskette or the input spool file. The RV command reads job control streams only from the $Y$JCS file or an alternate job control library file, and is used when no card-image input is required. You may not specify an input device in the RV command.

Notes:

1. *When you use the RUN command with a data set label diskette as input device, make sure, prior to entering the command, that the diskette you need is mounted on a diskette drive.*

2. *You may not use the RUN command to run a job requiring the use of an actual card reader; you may only use spooled readers.*

The RV command is used when no input device is required.

Format

```
RUN ⎧([did],label)⎫ Δ[jobname][(new-name)] ⎡⎧ :alt-filename                                          ⎫⎤
    ⎩(RDR,label)  ⎭                         ⎢⎪ : ⎛alt-filename,  ⎧RES⎫⎞                             ⎪⎥
                                            ⎢⎪   ⎜               ⎨RUN⎬⎟                             ⎪⎥
                                            ⎢⎨   ⎝               ⎩vsn⎭⎠                             ⎬⎥
                                            ⎢⎪ : ⎛alt-filename, ⎡⎧RES⎫⎤,read-pass⎞                  ⎪⎥
                                            ⎢⎪   ⎜              ⎢⎨RUN⎬⎥          ⎟                  ⎪⎥
                                            ⎣⎩   ⎝              ⎣⎩vsn⎭⎦          ⎠                  ⎭⎦

                        ⎡,⎧PRE ⎫⎤          ⎡+⎧d1⎫⎤
                        ⎢ ⎪HIGH⎪⎥ [,time]  ⎢ ⎪: ⎪⎥ [,key-1=val-1,...,key-n=val-n]
                        ⎢ ⎨NOR ⎬⎥          ⎢ ⎨: ⎬⎥
                        ⎣ ⎩LOW ⎭⎦          ⎣ ⎩d9⎭⎦

RVΔjobname[(new-name)] ⎡⎧ :alt-filename                                          ⎫⎤
                       ⎢⎪ : ⎛alt-filename,  ⎧RES⎫⎞                             ⎪⎥
                       ⎢⎪   ⎜               ⎨RUN⎬⎟                             ⎪⎥
                       ⎢⎨   ⎝               ⎩vsn⎭⎠                             ⎬⎥
                       ⎢⎪ : ⎛alt-filename, ⎡⎧RES⎫⎤,read-pass⎞                  ⎪⎥
                       ⎢⎪   ⎜              ⎢⎨RUN⎬⎥          ⎟                  ⎪⎥
                       ⎣⎩   ⎝              ⎣⎩vsn⎭⎦          ⎠                  ⎭⎦

                        ⎡,⎧PRE ⎫⎤          ⎡+⎧d1⎫⎤
                        ⎢ ⎪HIGH⎪⎥ [,time]  ⎢ ⎪: ⎪⎥ [,key-1=val-1,...,key-n=val-n]
                        ⎢ ⎨NOR ⎬⎥          ⎢ ⎨: ⎬⎥
                        ⎣ ⎩LOW ⎭⎦          ⎣ ⎩d9⎭⎦
```

Parameters

`([did],label)`

Specifies a diskette volume from which the job control stream and replacement embedded data may be read. *did* specifies the device address of the diskette drive on which the diskette is mounted. *label* specifies the name of the diskette volume containing the embedded data. The diskette must have been recorded in data set label mode. The record size must be 128 bytes or less. The records must be unblocked and unspanned. *This parameter must be enclosed in parentheses.*

Note: *For more detailed information on* did, *refer to the OS/3* Installation Guide, *UP-8839.*

`(RDR,label)`

Specifies that the replacement embedded data is located on a subfile of the input spool file. RDR specifies that the data is located on the spool file. *label* specifies the name of the subfile containing the data. *This parameter must be enclosed in parentheses.*

`jobname`

Specifies the name of the job to be read from either $Y$JCS or the alternate JCS file specified. *The jobname is required if no input device (diskette or spool file) is specified to contain the job control stream you want to run.*

`(new-name)`

Specifies a new name for a job already stored under the job name. The job is read from $Y$JCS (or alternate) under the job name and is placed on a job queue and scheduled for execution under its new name. The job name and new name may be from one to eight alphanumeric characters long. *The new-name must be enclosed in parentheses.*

`:alt-filename`

Specifies the name of the alternate file, residing on SYSRES, that contains the job. If the alternate file has been cataloged, *vsn* identified for that file in the catalog is used. In this case, the catalog does not contain a password for the file, so you do not need to enter one with the command.

```
: /alt-filename, (RES\ \
 (               {RUN} )
  \              (vsn/ /
```

Specifies the name of the alternate file containing the job and identifies a volume serial number (*RES*, *RUN*, or vsn) for the file. The alternate file may reside on either a disk, or a diskette recorded in format label mode. If the alternate file resides on SYSRES, specify *RES*. If it resides on $Y$RUN, specify *RUN*. If it resides on another volume, enter the serial number of that volume. If another file with the same file name is in the catalog, the volume serial number you enter with the command distinguishes between the two files and overrides the catalog volume serial number. There must not be a password for the alternate file in the catalog. *This command must include parentheses as shown.*

```
: /alt-filename, [(RES\],read-pass\
 (               [{RUN}]           )
  \              [(vsn/]          /
```

Specifies the name of the alternate file containing the job, a volume serial number if needed or wanted, and a password, identified in the catalog, required to read from the file. The volume serial number is specified as before. If you do not enter a volume serial number, the one listed in the catalog will be used. *This parameter must include parentheses as shown.*

```
⎧PRE ⎫
⎨HIGH⎬
⎪NOR ⎪
⎩LOW ⎭
```

Specifies the scheduling priority of your job. PRE specifies that the job should run at *preemptive* priority, the highest priority available. Preemptive jobs, in order to obtain sufficient main storage for execution, may cause other, lower priority jobs to be rolled out (on systems with rollin/rollout configured). *You should never schedule a job with preemptive priority without first consulting the system administrator.* HIGH specifies that the job should run at *high* priority. High priority jobs will be scheduled for execution before jobs of lower priority, but will not be scheduled until any preemptive jobs are scheduled. NOR specifies that the job should be run at *normal* priority. Normal priority jobs run only when there are no jobs left in either the preemptive or high priority queues. Normal priority is used for most jobs. LOW specifies a low priority. Low priority jobs run only when no other jobs are left on any other queue in a non-HOLD state. If you do not specify a scheduling priority, the priority indicated in the // JOB statement of the job control stream is used. If no priority was specified in the // JOB statement, normal priority is assigned by default.

`time`

Specifies the time of day to start execution of your job. The start time is military time. The job execution begins as soon as the resources are available after the time specified.

`d1` through `d9`

Specifies a future day for the start of the job (up to ten days from the specified date) in increments of one day, 1 through 9, added to the time specified in the time parameter.

`key-1=val-1,...,key-n=val-n`

Specifies a series of keywords to be used by the job you wish to run. The keywords and their values must be supplied by the person creating or running the job.

Note: *The total length of all parameters specified in this command may be no longer than 60 characters.*

Examples

```
RU(320,INFILE) OURJOB:(JOBFILE,MYVOL1)
```

In this example, replacement embedded data for the job named OURJOB is read from the diskette mounted on device 320. INFILE is the name of the diskette file that contains the embedded data. The job itself (OURJOB) resides on an alternate file called JOBFILE, which is located on a disk volume called MYVOL1. The job runs at normal priority.

```
RU(RDR,MYFILE) MYJOB,H
```

In this example, replacement embedded data for the job named MYJOB (which resides in the $Y$JCS file) is read from the input spool file (specified by RDR). MYFILE is the name of the subfile (or label) located on the input spool file. The job runs at high priority.

```
RV MYJOB:(JOBFILE,REL082,SECRET)
```

In this example, the job named MYJOB is being run from the file named JOBFILE, located on the volume that has the volume serial number of REL082. SECRET is the password required to read the file. The job runs at normal priority.

```
RV PAYJOB,L
```

In this example, the job PAYJOB is to be run at *low* priority. Since no input device or alternate file was specified, the job control stream for PAYJOB resides on $Y$JCS, the system job control stream file.

```
RV JOBPAY,L2230+1
```

In this example, the job named JOBPAY is run at low priority starting after 10:30 p.m. tomorrow.

The following conditions may cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were improperly entered.

- File Not Found

  The system cannot find the file on which the job you want is located.

2.5. Prerun Job Execution

The job control procedure (jproc) calls mentioned earlier are actually a series of job control statements that perform a specific function. Before a jproc can be used by the system as part of the job control stream, it must be expanded, or changed from a single statement into all the statements that single statement represents. The expansion process is one of the most time-consuming steps in the job execution process. However, using two job control option statements, you may save job control streams in the expanded state, cutting down the time needed to run those jobs in the future. The two option statements are // OPTION SAVE and // OPTION NOSCHED. The SAVE option inserted in a job control stream allows the job to be run when a RUN command is entered, and it saves the job control stream after it is expanded. The NOSCHED option only expands the job control stream and saves it, without scheduling the job for execution.

Expanded job control streams are saved in the $Y$SAVE library file or an alternate MIRAM library file. It is important to note that they are not stored in a statement-by-statement format. The job control streams are translated into code recognizable only to the RUN processor. Therefore, you cannot make changes to a saved job control stream stored in the $Y$SAVE file. Note also, if the main storage requirements of a saved job increase, the job must be saved again.

2.5.1. The SI/SC Commands

The SI/SC commands initiate the reading of a job control stream from the $Y$SAVE library file (where it has been saved in its expanded state) and then schedule the job for execution.

The SI command is used to initiate the reading of a job control stream that requires the use of an input device, either a diskette or spool file, to replace data embedded in the job control stream. When you use the SI command with a diskette as input device, be sure, prior to entering the command, that the diskette you need is mounted. The SC command is used when no input device is required.

Note: *You may not use the SI command to run a job requiring the use of an actual card reader; you may only use spooled readers.*

Format

```
SI {([did],label)} Δ[jobname][(new-name)] [{ :alt-filename                                 }]
   {(RDR,label)  }                         [{ :(alt-filename, {RES})                       }]
                                           [{                 {RUN}                        }]
        [,{PRE }] [time] [+{d1}]           [{                 {vsn}                        }]
        [ {HIGH}]        [ { :}]           [{                                              }]
        [ {NOR }]        [ { :}]           [{ :(alt-filename, [{RES}] ,read-pass)          }]
        [ {LOW }]        [ {D9}]           [{                 [{RUN}]                      }]
                                           [{                 [{vsn}]                      }]
```

```
SCΔjobname[(new-name)] [{ :alt-filename                           }] [,{PRE }] [time] [+{d1}]
                       [{ :(alt-filename, {RES})                  }] [ {HIGH}]        [ { :}]
                       [{                 {RUN}                   }] [ {NOR }]        [ { :}]
                       [{                 {vsn}                   }] [ {LOW }]        [ {d9}]
                       [{                                         }]
                       [{ :(alt-filename, [{RES}] ,read-pass)     }]
                       [{                 [{RUN}]                 }]
                       [{                 [{vsn}]                 }]
```

Parameters

`([did],label)`

Specifies a diskette volume from which replacement embedded data is to be read. *did* specifies the device address of the diskette drive on which the diskette is mounted. *label* specifies the name of the diskette volume containing the embedded data. The diskette must have been recorded in data set label mode. The record size must be 128 bytes or less. The records must be unblocked and unspanned. *This parameter must be enclosed in parentheses.*

Note: *For more detailed information on* did, *refer to the* OS/3 Installation Guide, *UP-8839.*

`(RDR,label)`

Specifies that the replacement embedded data is located on a subfile of the input spool file. RDR specifies that the data is located on the spool file. *label* specifies the name of the subfile containing the data. *This parameter must be enclosed in parentheses.*

`jobname`

Specifies the name of the job to be read from $Y$SAVE and scheduled for execution.

```
(new-name)
```

Specifies a new name for a job already stored under the job name. The job is read from $Y$SAVE or alternate MIRAM library under the job name and is placed on a job queue and scheduled for execution under its new name. The job name and new name may be from one to eight alphanumeric characters long. The new name must be enclosed in parentheses.

```
:alt-filename
```

Specifies the name of the alternate MIRAM file, residing on SYSRES, that contains the job. If the alternate file has been cataloged, *vsn* identified for that file in the catalog is used. In this case, the catalog does not contain a read password for the file, so you do not need to enter one with the command.

```
:  / alt-filename,  ⎧ RES ⎫ \
  (                 ⎨ RUN ⎬  )
   \                ⎩ vsn ⎭ /
```

Specifies the name of the alternate MIRAM file containing the job and identifies a volume serial number (*RES*, RUN, or vsn) for the file. The alternate MIRAM file may reside either on a disk or on a diskette recorded in format label mode. If the alternate file resides on SYSRES, specify *RES*. If it resides on $Y$RUN, specify RUN. If it resides on another volume, enter the serial number of that volume. If another file with the same file name is in the catalog, the volume serial number you enter with the command distinguishes between the two files and overrides the catalog volume serial number. There must not be a read password for the alternate file in the catalog. *This command must include parentheses as shown.*

```
: / alt-filename, ⎡ ⎧ RES ⎫ ⎤,read-pass \
 (                ⎢ ⎨ RUN ⎬ ⎥            )
  \               ⎣ ⎩ vsn ⎭ ⎦           /
```

Specifies the name of the alternate MIRAM file containing the job, a volume serial number if needed or wanted, and a password, identified in the catalog, required to read from the file. The volume serial number is specified as before. If you do not enter a volume serial number, the one listed in the catalog will be used. *This parameter must include parentheses as shown.*

```
⎧PRE ⎫
⎪HIGH⎪
⎨NOR ⎬
⎩LOW ⎭
```

Specifies the scheduling priority of your job. PRE specifies that the job should run at *preemptive* priority, the highest priority available. Preemptive jobs, in order to obtain sufficient main storage for execution, may cause other, lower priority jobs to be rolled out (on systems with rollin/rollout configured). *You should never schedule a job with preemptive priority without first consulting the system administrator.* HIGH specifies that jobs should run at *high priority*. High priority jobs will be scheduled for execution before jobs of lower priority, but will not be scheduled until any preemptive jobs are scheduled.

NOR specifies that the job should run at *normal* priority. Normal priority jobs run only when there are no jobs left in either the preemptive or high priority queues. Normal priority is used for most jobs. LOW specifies a low priority. Low priority jobs run only when no other jobs are left on any other queue. If you do not specify a scheduling priority, the priority indicated in the // JOB statement of the job control stream is used. If no priority was specified in the // JOB statement, normal priority is assigned by default.

`time`

Specifies the time of day to start execution of your job. The start time is military time. The job execution begins as soon as the resources are available after the time specified.

`d1` through `d9`

Specifies a future day for the start of the job (up to ten days from the specified date) in increments of one day, 1 through 9, added to the time specified in the time parameter.

Examples

```
SI(321,MYFILE) PAYJOB:(PAYFILE,JOBVOL)
```

In this example, embedded data from file MYFILE is read in from a diskette mounted on device 321. The saved job using the embedded data is called PAYJOB. PAYJOB is located on the MIRAM file called PAYFILE, which resides on a volume called JOBVOL. PAYJOB runs at normal priority.

```
SC MYJOB,H
```

In this example, the job named MYJOB has previously been saved in its expanded state. It is being run by entering the SC command because there is no embedded data in the job control stream to be replaced. It will be scheduled as a high priority job.

```
SC JOBPAY,L2300+5
```

In this example, the job named JOBPAY was saved in $Y$SAVE library using the NOSCHED job control option. As no data input device is required, it is run by calling the SC command. The job will run at low priority after 2300 hours military time in five days.

The following conditions could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were improperly entered.

- File Not Found

  The job file cannot be found.

2.6. The Execute Facility

EXECUTE is an interactive facility designed to save you response time if you run more than one workstation-oriented job in a single workstation session.

Whenever you initiate a job, it does not begin executing immediately. First, the run processor scans your control stream to translate job control statements and to expand jprocs. Then it checks for order and syntax errors. If your control stream is error free, the run processor builds a table of control blocks that describe your job requirements. Next, it creates a file for your job on $Y$RUN.

When the run processor is finished, the job scheduler function is activated. It reserves devices and main storage for your job as they become available. It then selects your job for execution according to its priority when the devices and main storage needed to run it are available. Each time you run a job, the run processor and job scheduling steps are repeated.

The EXECUTE facility, however, allows you to run a set of programs without going through the run processor and job scheduling steps for each program. It does this by enabling you to define a single job control stream for a set of programs of your choosing. This job control stream is called a super-set job control stream. When you run the super-set job control stream, it creates an interactive job environment. All a workstation operator has to do is select a program from the super set and issue an EXECUTE command. Since the job environment has already been established, the program is loaded and executed without any wait for job control processing.

2.6.1. Choosing Jobs to Run Interactively

Before building a super-set job control stream, you must select the programs you will execute in an interactive job environment. When choosing programs, consider these points:

- Choose programs that use the workstation. Examples are programs that use screen format services or menu services.
- Do not choose programs that call for embedded data (// PARAM cards or /$.../* sequences). They will not work. EXECUTE is designed only for programs that interactively ask you for information.
- Do not choose programs that are run in batch mode.

2.6.2. Building the Super-Set Job Control Stream

The super-set job control stream is based on the job control streams and resource requirements for each program you've selected for your super-set. The resources you must take into consideration are:

- Main storage
- Peripheral assignments
- Workstation assignments

The following steps outline the basic job control requirements needed to build a super-set job control stream.

Step 1:

The first card you build is the jobname card:

```
    // JOB $$&USER$,,main storage requirement
```

The name $$&USER$ is the jobname the EXECUTE facility expects to find. You can specify your own jobname but when you run your super-set job control stream, you must rename it to $$&USER$. (The RV and SC commands have a new-name parameter where you would specify $$&USER$.) It is easier to keep $$&USER$ as the jobname and then, if necessary, write the super-set control stream to a file under another name.

The jobname card must also allocate enough main storage to run the largest program in your super-set. (You may need to consult a link map for the size of your user programs.)

You can insert any // OPTION cards you wish to include after the // JOB card.

Step 2:

A single workstation file definition is required. It must be of the form:

```
// DVC 200 // LFD lfd-name
```

You may define only one workstation file. Therefore, a single lfd name must be agreed upon for all programs in your super-set job control stream. This may mean recompiling your programs to use the agreed-upon lfd-name. A // UID must not be specified. Multiple lfd's for this file are also not permitted. A // LBL statement is allowed, but serves no purpose in this context.

Step 3:

You must allocate peripherals (printer, punch, diskette, disk, and tape devices). For easier construction, you should group all file definitions for like volume names together. DVC numbers may need to be resolved so that they reflect the correct volume names; for example, you should construct your statements so that DVC 50 always refers to volume X, DVC 51 refers to volume Y, and so forth.

The DVCVOL jproc should be used with care. If you run the super-set job control stream using the RV command, then any jproc processing could add to initiation time. On the other hand, if you run your super-set job control stream using the SC command, then jprocs have no adverse effect on initiation time.

If one or more programs use a different logical name for the same file, the file can be assigned more than one LFD name. For example:

```
// DVC 50  // VOL INVTRY
// LBL INVENTORY  // LFD INVILE
// DVC 50  // VOL INVTRY
// LBL INVENTORY  // LFD INVENTY
```

Note: *Devices allocated to a super-set job remain allocated for the duration of the user session.*

Step 4:

All programs in your super-set must reside on the same library file. Thus, you may need to copy your programs to a common library. You must define this library in your super-set job control stream. In addition, the lfd-name for this file must be placed on the // EXEC statement for the super-set job control stream. If your common library is the $Y$LOD library, it isn't necessary to define the file.

The // EXEC statement executes a system-supplied program that actually creates the interactive job environment. The statement is:

```
// EXEC $$INT,lfd-name
```

where the lfd-name is the library where your programs reside. The super-set job control stream does not reference any job but $$INT, which resides on $Y$LOD. Thus, no special handling is required for $$INT.

You end the super-set job control stream with the following statements:

```
/&
// FIN (for card input only)
```

Step 5:

You must file the super-set job control stream on disk. You can do this with the FILE command or EDT. Once it's on disk, you can run it with the RV command. For additional speed, you can save the job by including a // OPTION SAVE,NOSCHED statement in your super-set control stream. Once a job is saved, it can be run with the SC command.

2.6.3. Using the EXECUTE Command

To begin an interactive job session, you must run the super-set job control stream. Using the RV command, you enter:

```
RV jobname
```

where jobname is the name of the module in which your super-set job control stream resides. If your super-set job control stream was saved in the expanded form (via the // OPTION SAVE/NOSCHED statement), you can run it with the SC command:

```
SC jobname
```

If you used any name other than $$&USER$ on the // JOB statement, you must rename the job on the RV or SC command:

```
RV jobname($$&USER$)
SC jobname($$&USER$)
```

(Note that you can include the RUN statement for your super-set job control stream in a user's execution profile. This way, when the user logs on, the super-set job control stream is automatically initiated.)

Once your super-set job control stream is processed, the job (or interactive job environment) that is created has the name

```
$$userid
```

in the system, where userid is the user-id under which you logged on. This enables a single super-set job control stream to be used simultaneously at different workstations. Each time the super-set job control stream is run, a new interactive job environment is established with a different user-id.

With the interactive job environment ready, you can issue requests to execute programs:

```
EXECUTE program-name
```

where program is the 1- to 6-character name from the // EXEC statement of one of the user programs in your super set. The program is loaded into the job region and is given control. When the program terminates (either normally or abnormally), you receive the message:

```
IS126 EXECUTE COMMAND TERMINATED
```

You may issue only one EXECUTE command at a time. That is, you must wait for one program to finish before you can initiate another one. You can, however, issue as many EXECUTE commands in the course of a single session as you'd like. Dumps requested via the // OPTION statement are produced as usual, if the program terminates abnormally. Any spooled output is also printed when the EXECUTE command has terminated.

When an EXECUTE command terminates, the job region remains available and you can issue another EXECUTE command. You may also use other workstation commands, such as COPY, EDT, RUN, or CONNECT, between EXECUTE commands.

To end the interactive job environment, you simply logoff. If you want to use the CANCEL command, you must remember that, when an EXECUTE command is active (a program is running), you must first cancel the program that is running and then cancel the interactive job environment. If you use the CANCEL command when an EXECUTE command is not active, the complete job environment is cancelled. When cancelling the job environment, remember that the jobname is always *$$userid*, not $$INT.

2.6.4. Creating and Running a Sample Super-Set Job Control Stream

Suppose there are three programs that you consistently run in a single workstation session. These programs are an RPG II program that processes factory shipments, another RPG II program that updates the factory's vendor information, and a COBOL program that controls invoicing. In order to achieve faster response times, you want to create an interactive job environment for these three programs by using the EXECUTE facility. Figure 2-1 lists the job control streams for all three programs.

```
RPG II SHPMNT                     RPG II VENDOR                     COBOL
PROCESSING PROGRAM                UPDATE PROCESSING PROGRAM         INVOICING PROGRAM

// JOB SHIPMENT,,4000             // JOB VNDRUPDT,,A000             // JOB INVOICE,,7800
// DVC 20  // LFD PRNTR           // DVC 20  // LFD PRNTR           // DVC 20  // LFD PRNTR
// DVC 200  // LFD WKSTN          // DVC 200  // LFD WKSTN          // DVC 200  // LFD WORKSTAT
// DVC 50  // VOL INVTRY          // DVC 50  // VOL INVNTY          // DVC 50  // VOL INVTRY
// LBL INVENTORY  // LFD INV      // LBL INVENTORY  // LFD INV      // LBL INVENTORY  // LFD INVFILE
// DVC 50  // VOL INVTRY          // DVC 50  // VOL INVNTY          // DVC 51  // VOL ACCTNG
// LBL BACKORDER  // LFD BKORD    // LBL VENDORS  // LFD VEND       // LBL BILLS  // LFD CUSTBILL
// DVC 51  // VOL PROGRM          // DVC 51  // VOL PROGRM          // DVC 52  // VOL PROGRM
// LBL LOADLIB  // LFD LOAD       // LBL LOADLIB  // LFD LOAD       // LBL LOADLIB  // LFD LOAD
// EXEC SHPMNT,LOAD               // EXEC VENDOR,LOAD               // EXEC INVOIC,LOAD
/&                                /&                                /&
// FIN                            // FIN                            // FIN
```

Figure 2-1. Sample Programs

On the // JOB statement, you use the jobname $$&USER$ and you evaluate the main storage requirements of the programs in your superset. The largest of the three programs is the program VENDOR. Its main storage requirement is A000. Thus, the finished // JOB statement is:

```
// JOB $$&USER$,,A000
```

In addition, you want a job dump in case an error arises when you run the program. You include a // OPTION statement following the // JOB statement:

```
// OPTION JOBDUMP
```

Next, a workstation file assignment must be developed. Programs SHPMNT and VENDOR use an lfd-name of WKSTN, while INVOIC uses WORKSTAT. In order to include INVOIC in the super set, the program must be recompiled with the common lfd-name WKSTN. Once this is done, you can use the super-set workstation device assignment:

```
// DVC 200  // LFD WKSTN
```

Now you must make device assignments. You define a printer with a common lfd-name and make a series of disk assignments. You decide that DVC 50 refers to INVNTY, DVC 51 to ACCTNG, and DVC 52 to PROGRM. Since duplicate definitions with the same lfd-names are permitted for all files except the workstation, you can construct the device assignment sets as:

```
// DVC 20  // LFD PRNTR
// DVC 50  // VOL INVTRY
// LBL INVENTORY  // LFD INVFILE
// DVC 50  // VOL INVTRY
// LBL INVENTORY  // LFD INV
// DVC 50  // INVTRY
// LBL BACKORDER  // LFD BKORD
// DVC 50  // VOL INVTRY
// LBL VENDORS  // LFD VEND
// DVC 51  // VOL ACCTNG
// LBL BILLS  // LFD CUSTBILL
// DVC 52  // VOL PROGRAM
// LBL LOADLIB  // LFD LOAD
```

Since all three programs already reside in the same library, it isn't necessary to copy them to a common library. The last three statements needed to complete the super-set job control stream are:

```
// EXEC $$INT,LOAD
/&
// FIN
```

Figure 2-2 shows you the completed super-set job control stream.

Once constructed, you now write the job control stream either to the $Y$JCS library file or to an alternate library file. You can perform the write function through EDT or the FILE command. For this example, the super-set control stream is written to a module called BILLING1 on the file MYFILE, which resides on disk volume MYVOL1.

```
// JOB $$&USER$,,A000
// OPTION JOBDUMP
// DVC 20  // LFD PRNTR
// DVC 50  // VOL INVTRY
// LBL INVENTORY  // LFD INVFILE
// DVC 50  // VOL INVTRY
// LBL INVENTORY // LFD INV
// DVC 50  // VOL INVTRY
// LBL BACKORDER  // LFD BKORD
// DVC 50  // VOL INVTRY
// LBL VENDORS  // LFD VEND
// DVC 51  // VOL ACCTNG
// LBL BILLS  // LFD CUSTBILL
// DVC 52  // VOL PROGRM
// LBL LOADLIB  // LFD LOAD
// DVC 200  // LFD WKSTN
// EXEC $$INT,LOAD
/&
// FIN
```

Figure 2-2. Completed Super-Set Job Control Stream

Later, when you are ready to run the super-set job control stream, you log on:

```
LOGON ANDY
```

You then enter the run command:

```
RV BILLING1:(MYFILE,MYVOL1)
```

When the system has processed your super-set job, the interactive job environment is created under the name:

```
$$ANDY
```

where ANDY is your user-id. At this point, you can enter an EXECUTE command to run one of the programs in your super-set:

```
EX VENDOR
```

When program VENDOR terminates, the message

```
IS126 EXECUTE COMMAND TERMINATED
```

is displayed on your workstation screen. You can now enter another EXECUTE command:

```
EX SHPMNT
```

When you've run the necessary programs from your super set, you end the interactive job environment by simply logging off:

```
LOGOFF
```

If you're not ready to log off, however, you can cancel the interactive job environment by issuing the CANCEL command:

```
CANCEL $$ANDY
```

Note that you can cancel $$ANDY only if an EXECUTE command is not active. If an EXECUTE command is active, you must first cancel the program that is running and then cancel the job environment. For example:

First command:	`CA VENDOR,N`
Second command:	`CA $$ANDY,N`

2.6.5. Error Messages

The following are error messages that could be displayed at your workstation in the event of a problem:

- `IS124 NO LOAD MODULE NAME SPECIFIED`

  An EXECUTE command was entered without a program name. A program name must follow the command verb, separated by a space, and is one to six characters in length.

- `IS78 EXECUTE COMMAND STILL ACTIVE, WAIT FOR IT TO FINISH`

  You must wait for one EXECUTE command to finish before issuing another.

- `IS127 LOAD MODULE NAME TOO LONG`

  The program name specified on the command is longer than six characters. Consult the link map for the correct program name.

- `IS128 EXECUTE COMMAND NOT ALLOWED NOW, W/S STILL IN USE`

  You cannot execute a program while the workstation is being used by another job or interactive utility. The workstation may have been connected (via the CONNECT command) to a job, or a command such as EDT or BASIC may be active.

- `IS129 EXECUTE COMMAND ENCOUNTERED ERROR CODE xx`

  A system error was encountered while trying to load your program. See the system messages manual for a full explanation. The most common error codes are 51 (program not found or spelled incorrectly) and 5B (insufficient main storage to run program).

- `IS31 INVALID OPTION FOR EXECUTE COMMAND`

  The only parameter permitted on the EXECUTE command is the program name. Additional parameters entered after the program name cause this error.

If you try to use the EXECUTE command before the job environment has been established, an automatic DISPLAY JS command is issued by the system. This command tells you why the job environment is not ready. For example, the super-set job could still be under control of the run processor or there isn't enough main storage for it to run yet. Remember, the super-set job control stream is constrained by the same resource limitations as any other job; for example, main storage, job slots, and CPU utilization.

2.7. Downline Loading Programs (DLOAD)

The DLOAD command allows a UTS 400 terminal user or a UTS 40/40D workstation user to downline load a program to terminal storage (memory). It is specifically designed for users of the PL/M and COBOL compilers and the MAC80 assembler. Any program you load with the DLOAD command must reside in the $Y$LOD library.

Downline loading is the process by which you load a program designed to execute on a UTS 400 terminal or on a UTS 40/40D workstation "down a communications line" to a terminal from a host processor. Aside from using the DLOAD command, downline loading can also be done using an ICAM communications user program (CUP). You may also load a program offline, or manually, from an auxiliary device. If you're manually loading from an auxiliary device, you must have previously downline loaded your program from your host processor to your auxiliary device, such as a diskette. The *Universal Terminal Systems 400/4000 (UTS 400/4000) to OS/3 Interface User Guide/Programmer Reference* (UP-8611) describes both downline loading through ICAM and offline loading from an auxiliary device.

Note: *The DLOAD command does not support loading to diskette from the host. As a result, segmented COBOL programs cannot be loaded to the diskette with this command. This can only be done using an ICAM communications user program (CUP).*

Format

```
DLOADΔ ⎧program-name⎫
       ⎩/OFFLINE    ⎭
```

where:

`program-name`

Specifies the program, residing in $Y$LOD, that you want to downline load. This form of the DLOAD command allocates all of the auxiliary devices your system needs to downline load the program and then loads it. During the time your system loads and executes your program, DLOAD has sole control of those auxiliary devices, and you cannot run any other program that uses them. Also, you cannot successfully issue ASK or TELL commands during the time your system loads and executes your program. If issued, these commands are sent to the system console. (See 3.2.1 and 3.2.10 for information about the ASK and TELL commands, respectively.) As the loading takes place the message LOAD IN PROGRESS is displayed. After your program terminates, you must enter the UNLOAD command (2.8) to free the devices for other uses.

`/OFFLINE`

Allocates all of the auxiliary devices needed for offline, or manually, loading a program from an auxiliary device. Therefore, you must enter DLOADΔ/OFFLINE before you offline load the program. Once you receive the message READY TO LOAD, AUXILIARY DEVICES ARE ALLOCATED, you can manually load the program. See the *Universal Terminal Systems 400/4000 (UTS 400/4000) to OS/3 Interface User Guide/Programmer Reference* (UP-8611) for information on offline loading programs. Once your program terminates, remember to enter the UNLOAD command to free the auxiliary devices for other uses.

Example

```
DLOAD MYPROG1
```

In this example, you are downline loading the program MYPROG1 to terminal storage (memory).

The following conditions could cause this command to be rejected:

- Wrong Device

  The DLOAD command can be initiated only from a UTS 400 terminal or a UTS 40/40D workstation.

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command was entered improperly.

The following are error messages associated with the DLOAD command:

- Errors unique to DLOAD signifying an internal problem

```
IS107 MEMORY START ADDRESSES NOT EQUAL IN DOWN-LINE LOAD

IS109 ILLEGAL CONTROL CODE FOUND IN DOWN-LINE LOAD
```

- Other errors unique to DLOAD

```
IS108 MEMORY ADDRESS OUT OF RANGE FOR DOWN-LINE LOAD

IS110 DOWN-LINE LOAD NOT DIRECTED TO A MASTER WORKSTATION

IS111 TERMINAL REJECTED DOWN-LINE LOAD, MAY NOT BE PROGRAMMABLE

IS133 AUXILIARY DEVICES ARE NOT AVAILABLE
```

2.8. Freeing Auxiliary Devices (UNLOAD)

The UNLOAD command frees devices that were allocated to a downline-loaded program. To downline load a program to a UTS 400 terminal or UTS 40/40D workstation, you use the DLOAD command (2.7). When your system loads and executes your program, DLOAD has sole control of those auxiliary devices your program requires and you cannot run any other program that uses them. Once your program terminates, you must enter the UNLOAD command to free those devices. Otherwise, your system won't be able to allocate those auxiliary devices to any other programs.

Format

```
UNLOAD
```

There are no parameters associated with this command.

Example

```
UNLOAD
```

This example frees whatever auxiliary devices were allocated to a downline-loaded program.

The following conditions could cause this command to be rejected:

- Wrong Device

  The UNLOAD command can be initiated only from a UTS 400 terminal or a UTS 40/40D workstation.

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command was entered improperly.

2.9. The Upline Dump Command for UTS 400 Terminal Users (ULD)

The upline dump command allows a UTS 400 user to obtain a dump of the terminal storage (memory). ULD reads from the user programmable region of the UTS 400 storage and writes the contents to a user-designated disk file.

There are two command options associated with the ULD command. You can specify that the contents of your dump file be printed and/or saved. If you specify the print option, ULD automatically schedules the job UPLDUMP for execution after the contents of terminal storage (memory) have been written to your dump file. UPLDUMP formats and prints the file contents. Once printing is completed, the file contents are scratched unless you specified the save option.

If you do not specify the print option, the contents of your dump file are automatically saved. You cannot (and would not want to) specify both the noprint and the scratch options. If you try to, the system will ignore your specification and save the file contents.

Format

```
ULDΔ,filename,vsn,SIZE=nΔ [ {PRINT  } Δ {SCRATCH} ]
                            {NOPRINT}   {SAVE   }
```

Command Parameters

`filename`

The name of the file to which you want the contents of the dump written. The filename doesn't have to be the name of an existing file. You can allocate file space through the ULD command. A filename must be unique and can be up to 44 alphanumeric characters long. It must also have a comma before and after it. You must enclose the filename in quotation marks or apostrophes if there are any spaces, commas, or parentheses embedded in it. If you use an already existing file, it must be a MIRAM file.

`vsn`

vsn is the volume serial number of the disk where your dump file will reside.

`SIZE=nn`

You must specify the number of disk cylinders you will need for your dump file. If the file you intend to use already exists, this parameter is not needed.

Command Options

```
{PRINT  }
{NOPRINT}
```

If you accept PRINT (the default), ULD schedules job UPLDUMP to format and print your dump file. When printing is completed, UPLDUMP scratches (erases) your dump file unless you specify the SAVE option. If you specify the NOPRINT option, UPLDUMP is not scheduled and the contents of your dump file are automatically saved.

```
{SCRATCH}
{ SAVE  }
```

You can specify whether or not you want your dump file saved or erased after it has been printed. SCRATCH is the default only if the PRINT option was selected. If you don't specify the PRINT option, ULD automatically saves your dump file and you cannot scratch it.

Examples

```
ULD ,MYFIL,,RES,SIZE=2 SAVE
```

In this example, you are writing the contents of your UTS 400 terminal storage (memory) to the file called MYFILE. MYFILE is on the volume RES and occupies two cylinders of file space. The dump is printed and the file contents are saved.

```
ULD ,DUMPFILE,REL082,SIZE=2
```

In this example, the dump is written to DUMPFILE, which resides on the REL082 volume. Two cylinders of file space were allocated for DUMPFILE. The contents of DUMPFILE are printed and then scratched since the SAVE option was not specified.

```
ULD ,THEFILE,MYVOL01,SIZE=3 NOPRINT
```

In this example, THEFILE is not printed. The contents, however, are saved even though the SAVE option was not specified.

The following conditions could cause this command to be rejected:

- Wrong Device

  The ULD command can be initiated only from a UTS 400 terminal.

- Wrong File Type

  UTS 400 terminal dump can only be written to a MIRAM file.

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command was entered improperly.

2.10. Changing Job Scheduling

After your job control stream is read and, if necessary, expanded, it is placed on a priority scheduling queue. It then waits until all the system resources it needs become available. When the resources all become available, the job is executed. You may alter the scheduling of your jobs as they wait for system resources on the scheduling queues. The following commands permit you to defer and reinstate the scheduling of a job, delete a job from a scheduling queue, change the scheduling priority of a job, and display a listing of the jobs on each scheduling queue. You can alter only the scheduling of jobs initiated under the user-id you entered when you logged onto the system, unless you have been given global control privileges by the system administrator. For more information, see the *Security Maintenance Utility Operations Guide*, UP-12028.

2.10.1. Rescheduling Jobs (BEGIN Command)

The BEGIN command enables you to allow the scheduling for execution of jobs deferred by the HOLD command. You may reschedule individual jobs or all jobs in the designated queue that you are allowed to control (see 1.5.1).

Note: *The BEGIN JBQ command only reschedules those jobs which are being held at the time you enter the command. It only affects jobs initiated under your user-id unless you have been given global control priveleges by the system administrator. When the system operator (working at the console) issues a HOLD JBQ command, not only are all jobs currently on the scheduling queue(s) specified held, but any jobs which are placed on the queue(s) after the HOLD JBQ command is issued are also held. When you issue a BEGIN JBQ command, you reschedule only those of your jobs being held when you issue the command.*

Format for Rescheduling All Jobs or Jobs in a Particular Job Queue

```
BEGIN JBQ [ , ⎧ A ⎫ ]
          [   ⎪ H ⎪ ]
          [   ⎨ N ⎬ ]
          [   ⎪ P ⎪ ]
          [   ⎩ L ⎭ ]
```

Format for Rescheduling Individual Jobs

```
BEGIN jobname
```

Parameters

`A/H/N/P/L`

Specifies the scheduling priority queue you wish to reschedule. Entering P reschedules all jobs in the preemptive priority job queue. H reschedules all jobs in the high priority job queue. N reschedules all jobs in the normal priority job queue. L reschedules all jobs in the low priority job queue. A reschedules all jobs in all scheduling priority job queues.

`jobname`

Specifies the name of the job you wish to reschedule for execution.

Example

```
BE JBQ,N
```

In this example, all jobs initiated under your user-id in the normal scheduling priority job queue, which has been placed on hold, are now rescheduled for execution.

The following condition could cause this command to be rejected:

Incorrect Syntax

The command was misspelled or ambiguous, or the command or parameters were improperly entered.

2.10.2. Deferring Jobs (HOLD Command)

The HOLD command enables you to defer the scheduling of jobs. You may hold individual jobs or all jobs in the designated queue that you are allowed to control (see 1.5.1). The job you hold is not scheduled until you enter a BEGIN command to remove the job from hold status. (To see what jobs are already on HOLD, use the DISPLAY JBQ command.)

Note: *The HOLD JBQ command only holds those jobs which are on a scheduling queue at the time the HOLD command is issued. Any jobs placed on a scheduling queue after the HOLD command is issued are not held.*

Format for Holding All Jobs or All Jobs on a Particular Job Queue

$$\underline{\text{HO}}\text{LD}\Delta\text{JBQ}\quad\left[\,,\begin{Bmatrix}\text{A}\\\text{H}\\\text{N}\\\text{P}\\\text{L}\end{Bmatrix}\right]$$

Format for Holding an Individual Job

$$\underline{\text{HO}}\text{LD}\Delta\text{jobname}$$

Parameters

```
A/H/N/P/L
```

Specifies which job queue you wish to place on hold status. Entering P holds all jobs initiated under your user-id in the preemptive priority job queue. H holds all jobs in the high priority job queue. N holds all jobs in the normal priority job queue. L holds all jobs in the low priority job queue. A holds all jobs in all job queues.

Example

```
HO JBQ,N
```

In this example, the jobs initiated under your user-id on the normal priority job queue are held from execution.

The following condition could cause this command to be rejected:

Incorrect Syntax

The command was misspelled or ambiguous, or the command or parameters were improperly entered.

2.10.3. Displaying the Contents of a Job Queue (DISPLAY JBQ Command)

The DISPLAY JBQ command enables you to display the contents of each scheduling priority job queue on the workstation screen. The display shows all the jobs residing in the queue, or queues you specified, by their job names. The job names of jobs deferred from scheduling by the HOLD command are displayed enclosed in parentheses.

Format

```
DISPLAYΔJBQ, ⎧A⎫
             ⎪H⎪
             ⎨N⎬
             ⎪P⎪
             ⎩L⎭
```

Parameters

```
A/H/N/P/L
```

Specifies the scheduling priority job queue you wish displayed. Entering P displays the contents of the preemptive priority job queue, H displays the contents of the high priority job queue, N displays the contents of the normal priority job queue, and L displays the contents of the low priority job queue. Entering A displays the contents all three job queues: preemptive first, then high, and then normal.

Example

```
DI JBQ,P
```

In this example, the contents of the preemptive priority job queue will be displayed.

The following condition could cause this command to be rejected:

Incorrect Syntax

The command was misspelled or ambiguous, or the command or parameters were improperly entered.

2.10.4. Deleting Jobs from a Job Queue (DELETE Command)

The DELETE command enables you to remove jobs from scheduling job queues. You may delete individual jobs, or all jobs in a particular queue, or all jobs in all queues.

Format for Deleting an Individual Job

```
DELETEΔjobname[,LOG]
```

Format for Deleting All Jobs on a Queue or All Jobs in the System

```
DELETEΔJBQ,⎧A⎫[,LOG]
           ⎪H⎪
           ⎨N⎬
           ⎪P⎪
           ⎩L⎭
```

Parameters

`jobname`
Is the 1- to 8-character name of the job you wish to delete.

`A/H/N/P/L`
Specifies the job queue from which you wish to delete all jobs. Entering P causes all such jobs to be deleted from the preemptive job priority queue; H causes all such jobs to be deleted from the high priority queue; N causes all such jobs to be deleted from the normal priority queue; L causes all such jobs to be deleted from the low priority queue; and A causes all such jobs to be deleted from all queues.

`LOG`
Causes the job log to be printed.

Example

```
DE JBQ,N
```

In this example, all jobs that are on the normal priority job queue are deleted.

The following condition could cause this command to be rejected:

Incorrect Syntax

The command was misspelled or ambiguous, or the command or parameters were improperly entered.

2.10.5. Changing the Scheduling Queue of a Job (CHANGE Command)

The CHANGE command enables you to move a job from one job queue to another, thus changing the scheduling priority of the job. If the job was in HOLD status on its original job queue, it will retain that HOLD status on its new job queue.

Format

```
CHANGEΔjobname, ⎧H⎫
                ⎪N⎪
                ⎨P⎬
                ⎩L⎭
```

Parameters

`jobname`

Is the name of the job whose job queue you wish to change.

`H/N/P/L`

Specifies in which job queue you wish to place the job. H specifies the high priority queue, N specifies the normal priority queue, L specifies the low priority queue, and P specifies the preemptive priority queue. *Do not move jobs from the normal priority queue to the high or preemptive queues, or from the high to the preemptive queue without first consulting your site administrator.*

Example

```
CH MYJOB,N
```

In this example, the job MYJOB is changed from either a high priority or a preemptive priority to normal priority.

2.11. Connecting a Workstation to a Job

In order to use workstations with a job, the workstations must be *connected* to the job. The workstations are actually connected to one or more files, created by the job to interface with workstations. The WORKSTATION mode of the workstations is connected to the files. There are several ways to connect workstations to the files. One method is through job control. When you create the job control stream for a job using workstations, certain options of the UID job control statement can be entered to cause workstations to be automatically connected to a job. Complete information on using job control to connect workstations may be found in the OS/3 *Job Control Programming Guide*, UP-9986.

If you want to connect to a job that has no automatic connection provision for your particular workstation, use the CONNECT workstation command, described in the following pages. System programs and interactive facilities automatically connect the workstation from which they were invoked.

Note: *A job using workstation files cannot be restarted from a checkpoint taken when the workstation files are open.*

2.11.1. The CONNECT Command

The CONNECT command enables you to connect WORKSTATION mode to a job. You may connect only to jobs that have been written to recognize workstations. You may issue the CONNECT command when the job is executing or on a job queue.

Note: *You cannot issue this command from a menu action table.*

Format

```
CONNECTΔjob[,filename]
```

Parameters

`job`

Specifies the name of the job to which you wish to connect the WORKSTATION mode of your workstation.

`filename`

Specifies the name of the workstation file to which you wish to connect. This parameter is required when there is more than one workstation file defined within the job. The file name may be up to 17 alphanumeric characters long.

Example

```
CON COLLECTN,BILLS
```

In this example, the workstation is connected to the workstation file BILLS of the job COLLECTN.

The following conditions could cause this comand to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were entered improperly.

- Attempt to Connect to a Job That Cannot Handle Any More Workstations

  The number of workstations that may be connected to a job is set by a statement in the job control stream used to run the job. No more than the number specified will be accepted.

- Attempt to Connect to a Job That Does Not Expect Workstations

  You may connect only to a job that has been specifically written to use workstations.

- Attempt to Connect to a Nonexistent File or Job

  You may connect only to jobs either executing or waiting for execution on a job queue. You may connect only to workstation files defined within the program.

- Implied Disconnect Cannot Be Accomplished

  For some reason, the system is unable to disconnect your workstation from the job it is currently connected to. Cannot accomplish the CONNECT command.

- Attempt to Connect to an Inactive Job

  You may connect only to a job that is active, i.e., executing on the system or on a job queue.

2.12. The Master Workstation

2.12.1. General

When a job is initiated at a workstation, that workstation normally has control of that job. The workstation functions as a minisystem console for the job. The workstation initiating the job has control regardless of the number of workstations subsequently connected to it. The controlling workstation is designated the *master workstation* for the job. Messages from the system concerning the job are routed to the master workstation, and responses to those messages and commands entered to control the job may be issued only from the master workstation. This is particularly important for commands. Many commands in this guide state that you may perform the command only on jobs initiated or running under your user-id. Since the user-id designates the master workstation, this means that only the master workstation of a job may perform commands on that job. As we shall see subsequently, the master workstation may be changed. However, whichever workstation is designated the master workstation is the *only* workstation controlling a particular job.

As we said earlier, the master workstation status of a workstation is maintained by the user-id entered when the master workstation was logged on. The user-id is saved by the system; it is appended to all commands entered at the workstation and all jobs for which that workstation is designated as the master workstation. If your system has DDP, you can also designate the host-id of a particular host that you want to control a job.

When a command is entered against a particular job, the system matches the user-id of the command against that of the job the command is directed to. If the user-ids match, the command is executed. If they do not match, the command is rejected. Figure 2-3 illustrates the manner in which the user-id controls program access. A command issued by the workstation logged on under user-id USERA cannot affect MYJOB, because MYJOB is under the control of a master workstation having the user-id USERB.

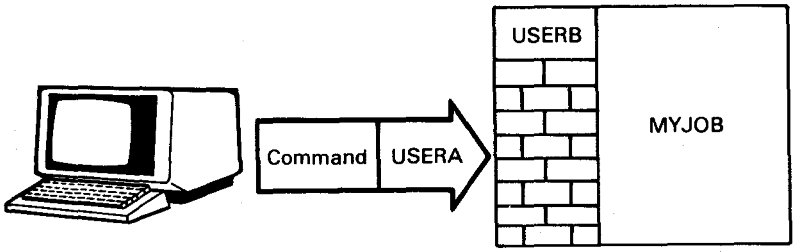


Figure 2-3. How the User-id Controls Access to Jobs

2.12.2. Changing the Master Workstation for a Job

You may designate a workstation other than the initiating workstation as the master workstation for a job. There are two methods you can use. The first is to log off from the workstation designated as master workstation for a particular job, and log on to another workstation. If you log on under the same user-id you used to log on to the initiating workstation, the workstation you log on to will become the master workstation.

The second method of designating a master workstation uses two parameters of the // OPTION job control statement.

`ORI=[host-id:]user-id`

Designates whatever workstation is logged on under the specified user-id as the master workstation. If your system has DDP, you can use the host-id to specify a particular host. If you omit the host-id, the local host (the processor on which the job is executing) is assumed. The host-id is optional but, if specified, must be followed by a user-id. The ORI option takes effect as soon as it is detected in the control stream, before the job is placed in the job queue. The workstation from which the command to start the job was initiated is no longer designated the master workstation for the job. The user-id may be from one to six alphanumeric characters long.

Note: *ORI=user-id cannot be specified in a job initiated from a remote batch terminal.*

`MAS=[host-id:]user-id`

Designates whatever workstation is logged on under the specified user-ID as the master workstation. The MAS option takes effect when the job is placed in the job queue. If your system has DDP, you can use the host-id to specify a particular host. If you omit the host-id, the local host (the processor on which the job is executing) is assumed. The host-id is optional but, if specified, must be followed by a user-id.

Note: *MAS=user-id cannot be specified in a job initiated from a remote batch terminal.*

You may use ORI and MAS together, designating one workstation as the master while the job is being acted upon the RUN processor, and another when the job goes onto a scheduling priority queue. By entering (EXEC) immediately after the user-id with MAS, the user-id specified will not change the master workstation designation until the job begins executing. Thus, the workstation specified by ORI controls the job while it is on a scheduling priority queue, and relinquishes control to the workstation specified by MAS only when the job begins execution.

Note: *For more detailed information on these job control statements, refer to the* Job Control Programming Guide, *UP-9986.*

If you initiate a job from a workstation, then log off that workstation and do not designate another workstation to take over, messages concerning the job will be routed to the system console. The system console may always control all jobs running on the system.

Section 3
General Workstation Commands

3.1. Introduction

This section covers those workstation commands not already covered in Sections 1 or 2. The commands covered in this section are divided into three parts:

1. Commands to control the job processing environment

2. Commands to control output spooling

3. Interactive utility commands

3.2. Commands to Control the Job Processing Environment

This part covers those commands you may use to control the environment in which your job is running. These commands enable you to communicate with the system operator; to obtain information on the status of your job as it is scheduled and while it is being executed; and to stop, restart, and terminate your job.

3.2.1. Asking Questions of Other Workstation Users (ASK Command)

The ASK command enables you to ask questions of other users or the system operator. The command displays your question to the other user, accepts the reply, and returns the reply to you. You do not have to wait for a response to your ASK command before entering another one.

Format

```
ASKΔ[user-id,]'text'
```

Parameters

user-ID

Specifies the user-id of the user you wish to question. If you do not specify a user-id, the question will be routed to the console operator. The console, however, has a user-id, which you may use in communicating with the console operator. It is $Y$CON. If you wish to ask a question of a user who has initiated an ENTER file, enter $Y$MAS as the user-id.

'text'

Is the text of your question to the operator. The text may be a maximum of 88 characters long. A longer text causes the command to be rejected. A comma must separate the text from the user-id. If there is no user-id, you do not need to enter a comma. *The text must be enclosed in apostrophes, and therefore, can't contain apostrophes itself unless you enter 2 consecutive apostrophes to represent the apostrophe contained inside your text. For example:*

ASK MARK,'ISN"T THE WEATHER GREAT?'

Example

A user with user id ANDY keys in the following question and sends it to a user with user id MARK (in system mode):

```
ASK MARK, 'IS DISK "RELPAK" AVAILABLE NOW?'
```

User MARK sees this question on his workstation screen in the form:

```
12?ASK003 IS67 MARK: IS DISK "RELPAK" AVAILABLE NOW?
```

User MARK responds:

```
12 YES
```

User ANDY then sees the following message on his screen:

```
25 ASK003ΔIS67 ANDY: YES
```

Note: *All responses are entered in system mode.*

The following conditions could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, the user-id was longer than six characters, or apostrophes were used incorrectly.

- Message Too Long

  The message text is longer than 88 characters. The command is rejected.

3.2.2. Canceling a Job (CANCEL Command)

The CANCEL command enables you to immediately halt processing of a job. When you enter the CANCEL command, the job is brought to an immediate halt; the job step currently executing is not completed, and any remaining job steps are not executed. CANCEL may be entered any time during job processing. *You may perform a CANCEL only of jobs executing under your user-id unless you have been given global control privileges.*

Format

$$\underline{\texttt{CAN}}\texttt{CEL}\Delta\texttt{jobname}\left[\,,\begin{Bmatrix}\texttt{D}\\\texttt{N}\end{Bmatrix}\right]$$

Parameters

`jobname`

Specifies the name of the job you wish to cancel.

`D/N`

Specifies whether or not you want a dump to be taken when the job is terminated, regardless of the dump option specified in the job control stream for the job. D specifies that you want a dump taken; N specifies that you do not want a dump taken. If you omit this parameter, the dump options contained in the job control stream for the job will remain in effect.

Example

```
CA MYJOB,D
```

In this example, the job named MYJOB is canceled. A dump is taken, regardless of the dump option specified in the job control stream for the job.

The following condition could cause this command to be rejected:

- Incorrect Syntax

The command was misspelled or ambiguous, or the command or parameters were improperly entered.

3.2.3. Obtaining Job Status Information (DISPLAY JS Command)

The DISPLAY JS command enables you to obtain information about jobs either initiated or running under your user-id. The command produces a 1-line display of the current status of the job about which you inquired. *You may request information only about jobs either initiated or running under your user-id, unless you have been given global status privileges by the system administrator.*

Format

```
DISPLAYΔJS[,jobname]
```

Parameter

jobname

Is the 1- to 8-character name of the job about which you want information. If you include a job name with the DI JS command, you will receive information about the job, whether it is in main storage or on a job queue. If you do not include a job name, you will receive information about all jobs under your user-id that are in main storage, but not those on job queues. Information about jobs is displayed one line at a time. If you entered no job name, press TRANSMIT after the first line of job information is displayed to see information about other jobs. The command concludes when DISPLAY END appears after you press the transmit key.

Example

```
DI JS,MYJOB
```

In this example, a display is produced of status information about a job named MYJOB.

The following screens are examples of the messages produced by the DISPLAY JS command. The examples show what information DI JS might display if it were entered against MYJOB as it proceeds through the various steps in job processing:

```
52 DI1945 MYJOB  IN STEP 1(LNKEDT)-PRI=10 CPU-TIME=00:01:43.874
```

In this example, MYJOB is active in its first step, performing linkage editing. The CPU TIME portion of the display indicates that the linkage editor has had control of the CPU for 1 minute, 43 seconds, and 874 milliseconds. If the job is proceeding, you can reenter DI JS for MYJOB and see an increase in the CPU TIME figure.

```
53 DI1945 MYJOB  IN STEP 2(LIBS00)-WAITING FOR I/O  #00005736
```

In this example, MYJOB is in its second step, executing the librarian. Currently, the 5736th I/O operation of this step is being performed. If you reenter DI JS, you may see the I/O number increase. If MYJOB remains at #00005736, it might be stuck, requiring your intervention.

```
54 DI1945 MYJOB  IN STEP 03      -IN STEP PROCESSOR
```

In this example, MYJOB is between job steps. Step 03 either has just completed or is about to start.

```
55 DI1945 MYJOB  NOT YET SCHEDULED-INSUFFICIENT MAIN STORAGE
```

This example shows a message you would receive if MYJOB is not executing. In this case, MYJOB has been placed on a job queue but has not been scheduled for execution because not enough main storage is available.

The following conditions could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were improperly entered.

- Invalid Access Attempt

  An attempt was made to access a job that is not on the system or is under another user-id. A message is displayed indicating that the job is not on the system in either case. You are not permitted to obtain status information from jobs other than those under your user-id.

3.2.4. Disconnecting a Workstation from a Job (FREE Command)

The FREE command enables you to manually disconnect a workstation from a job. After you issue a FREE command, the WORKSTATION mode of the workstation disconnected is unassigned and may be reassigned to another job. The FREE command is not normally required, because end-of-job processing procedures automatically disconnect all workstations assigned to the job. Also, when you issue a CONNECT command to a workstation already assigned to another job, the CONNECT command will issue a FREE command to disconnect the workstation before the CONNECT command is accomplished. The FREE command is most useful in allowing a frequently accessed job to be idled for short periods of time, but not removed from main storage. This permits the job to be accessed quickly, without having to wait for it to be rescheduled.

Note: You cannot issue this command from a menu action table.

Format

```
FREE
```

There are no parameters associated with this command.

The following conditions could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or syntax was entered improperly.

- Workstation Not Assigned

  You cannot disconnect a workstation that was not connected to a job in the first place.

- Command Not Permitted with Job Control

  You may not use the FREE command when you specified automatic connection of workstations in the job control stream used to run the job.

3.2.5. Suspending Job Processing (PAUSE Command)

You use the PAUSE command to suspend processing of a job. You may enter the PAUSE command at any time, and processing of the specified job is immediately suspended. If the job is between job steps, PAUSE will take effect at the beginning of the next job step. You reactivate a job suspended by the PAUSE command by entering the GO command. *You may suspend only jobs executing under your user-id, unless you have been given global control privileges by the system administrator.*

Format

```
PAUSEΔjobname
```

Parameter

jobname
: Specifies the name of the job you wish to suspend.

Example

```
PA MYJOB
```

In this example, the job MYJOB is suspended.

The following conditions may cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were improperly entered.

- No Job Name Specified

  You must specify a job name with this command.

3.2.6. Reactivating Suspended Jobs (GO Command)

The GO command is used to reactivate jobs that were suspended by using the PAUSE (3.2.5) command, or by job control operations. *You may reactivate only jobs executing under your user-id, unless you have been given global control privileges by the system administrator.*

Format

```
GO∆jobname[,nn]
```

Parameter

```
jobname
```
Is the name of the job you want to reactivate.

```
nn
```
Is the number of the action message. This allows you to suspend multi-task jobs and start other tasks through action messages.

Example

```
GO MYJOB
```

In this example, the job named MYJOB is reactivated after having been suspended.

The following conditions may cause this command to be rejected:

- Incorrect Syntax

  The command is misspelled or ambiguous, or the command or parameters were improperly entered.

- No Job Name Specified

  You must specify a job name with this command.

- Job Not Suspended

  The job you are trying to reactivate was not suspended.

3.2.7. Resuming Subsystem Execution (RESUME Command)

The RESUME command enables you to resume execution of the general editor or the BASIC programming language, which was suspended when the workstation entered SYSTEM mode.

Format

```
RESUME
```

There are no parameters associated with this command. Entering anything as a parameter for this command causes it to be rejected.

The following conditions may cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command was entered with parameters.

- No Program to Resume

  No subsystem was suspended, so none can be resumed.

3.2.8. Altering Display Characteristics (SCREEN Command)

The SCREEN command enables you to alter some operational characteristics of the workstation or terminal with which you are working. The SCREEN command sends you a message informing you when it has completed processing. The SCREEN command permits you to alter screen control and display characteristics and input translation.

You can issue the SCREEN command at any time during a workstation session. During a session, it affects batch jobs as well as interactive facilities like the general editor, BASIC, and DDP. Moreover, each workstation user can issue a SCREEN command. If several workstations are connected to one job, each workstation operator can control his workstation or terminal independent of other users.

You may use more than one line of the workstation screen to enter this command and its associated parameters. To do this, place a dash (-) as the last character in the first line of the command. The system recognizes the dash as a continuation character and asks you (in a message) for further input. You may use as many lines of the screen as you wish; just place a dash at the end of every line except the last one.

Format

```
SCREENΔ[,{SCROLL}][,{UPPER}][,XMIT={VAR }][,XFER={VAR }]
         {ROLL  }    {LOWER}        {CHAN}        {CHAN}
         {NP    }                   {ALL }        {ALL }
         {WRAP  }
         {NOROLL}

   [,SPEED={9600}][,SPACEBAR={DESTRUCT   }][,LINES={24}]
           {4800}            {NONDESTRUCT}         {12}
           {2400}
           {1200}
           {600 }
           {300 }

   [,KEYBOARD={STANDARD}][,INTENSITY={NORMAL }][,LOG={ALL     }]
              {KATAKANA}             {LOW    }       {COMMANDS}
                                     {REVERSE}

   [,{CENTRAL}][,{NONBURST}][,{CONTINUOUS}][,SI={TOP   }][,{HEADER  }]
     {WKSTN  }    {BURST   }   {PAGE      }      {BOTTOM}    {NOHEADER}
```

Parameters

SCROLL/ROLL/NP/WRAP/NOROLL

Specifies screen control characteristics. Normally, the cursor moves from the last character position on the last line of the screen to the first character position on the top line of the screen (called *wrapping*). You may change the screen so that, when the cursor reaches the last character position of the bottom line, it moves to the first character position of the top line of the screen and the contents of the screen are erased. This is the *NP* option. Or, you can change the screen so that, when the cursor reaches the last character position of the bottom line, it will cause the bottom line to move up one and bump the top line off the screen. The cursor then moves to the first character position of the new, blank, bottom line (called *scrolling*). To change from wrapping to scrolling, specify SCROLL or ROLL. If you have changed from wrapping to scrolling and wish to return to wrapping, specify WRAP or NOROLL. When applied to a System 80 workstation or System 80 console workstation, this parameter affects only WORKSTATION mode.

UPPER/LOWER

Specifies whether lowercase letters should be translated to uppercase upon input or remain lowercase. Specify UPPER if you want lowercase letters translated to uppercase. Specify LOWER if you want the lowercase letters to remain lowercase. When applied to a System 80 workstation or console workstation, this parameter affects only WORKSTATION mode.

XMIT=VAR/CHAN/ALL

Specifies what portion of the data entered on the screen is transmitted to the system. VAR specifies that only the unprotected data on the screen be transmitted. This is the most widely used mode and is required by screen format services. CHAN specifies transmitting only those fields changed by the workstation user. ALL specifies that all data, protected and unprotected, be transmitted. *This parameter is valid only when specified for a System 80 workstation or a console workstation.*

XFER=VAR/CHAN/ALL

Specifies what portion of the data entered on the screen is to be transferred to a peripheral device connected to the workstation or terminal. The three options, VAR, CHAN, and ALL, are the same as for the XMIT parameter. *This parameter is valid only when specified for a System 80 workstation or a console workstation.*

SPEED=9600/4800/2400/1200/600/300

Specifies the speed of the line connecting the workstation and any peripherals attached to the workstation.

The speeds are given in bits per second. The default value of 9600 bits per second is for direct-connected workstations. *This parameter is valid only when specified for a System 80 workstation or console workstation.*

SPACEBAR=DESTRUCT/NONDESTRUCT

Specifies whether the space bar destroys the character beneath the cursor as it advances or merely advances the cursor. DESTRUCT specifies that characters beneath the cursor are replaced with blank spaces as the cursor advances. NONDESTRUCT specifies that the spacebar merely advances the cursor without destroying the characters beneath it. *This parameter is valid only when specified for a System 80 workstation or console workstation.*

LINES=24/12

Specifies the number of lines on the workstation display screen. The indicator line present on workstation screens is not included in this count. The lines option does not apply when your workstation is in data mode (that is, if you are using the general editor or any other interactive facility). *This parameter is valid only when specified for a System 80 workstation or console workstation.*

KEYBOARD=STANDARD/KATAKANA

Specifies whether the keyboard generates standard English alphabetic characters or Katakana (Japanese) characters. *This parameter is valid only when specified for a System 80 workstation or console workstation having the necessary hardware to produce either Katakana or English characters.*

INTENSITY=NORMAL/LOW/REVERSE

Specifies the type of video available for protected fields of data displayed by programs. LOW specifies that low-intensity video is produced. REVERSE specifies that reverse video is produced. NORMAL specifies that the protected fields appear the same as the unprotected fields at normal intensity. *This parameter is valid only when specified for a System 80 workstation or console workstation.*

LOG=ALL/COMMANDS

Specifies which commands your workstation log will include. LOG=ALL specifies that your logs show all commands you enter - both in system mode and workstation mode. LOG=COMMANDS, the default, specifies that your logs show only commands entered in system mode. For example, if you specify LOG=ALL and activate the general editor, your log will show the system command EDT that activated the general editor, along with all of the editor commands you enter in workstation mode during your EDT session. However, if you do not specify the LOG parameter or specify LOG=COMMANDS, your log shows only the system command EDT, without any of your EDT commands.

CENTRAL/WKSTN

Specifies where your system prints your print files. Specifying CENTRAL, or omitting the parameter, directs all your print files to the central site printer. When it prints them depends on your specification for the NONBURST/BURST parameter of the SCREEN command. Specifying WKSTN directs all print files to the workstation auxiliary printer as soon as they complete, regardless of your specification for the NONBURST/BURST parameter. WKSTN applies only to print files for interactive products, specifically, EDT, ESCORT, BASIC, or the interactive services PRINT command. (For print files from your own jobs to be printed at an auxiliary printer, their job control must specify auxiliary printer output. See spooling and job accounting concepts and facilities.) If you choose WKSTN, make sure the auxiliary printer is available and ready for use.

Note: *If you specify WKSTN at a workstation that is not connected to an auxiliary printer, your system holds your print files until you do the following three things.*

1. *Log off that workstation.*
2. *Log on to the workstation that is connected to an auxiliary printer under the same user-id.*
3. *Issue an RP spooling command.*

Then, your system prints your files at the auxiliary printer.

The SCREEN command issued with either of these parameters does not affect the printing of any file that had already begun before you issued the SCREEN command.

NONBURST/BURST

Specifies when your system prints all print files that you've sent to the central site printer through the CENTRAL parameter of the SCREEN command. Specifying NONBURST, or omitting the parameter, tells your system to print all print files that you sent to the central site printer according to your specific ation for the SPOOLBURST parameter during SYSGEN. In other words, if SPOOLBURST=YES at SYSGEN, then your system prints all print files as soon as they complete. If SPOOLBURST=NO, it holds all print files until you log off. Then it prints them all together, along with your workstation log file. Specifying BURST tells your system to print all print files that you've directed to the central site printer as soon as they complete, regardless of what you have specified for the SPOOLBURST parameter at SYSGEN.

The SCREEN command issued with either of these options does not affect the printing of any file that had already begun before you issued the SCREEN command.

Note: *In some cases, system programs override NONBURST or BURST. For instance, the EDT LIST command includes a parameter that lets you print files immediately, without waiting until you log off. If you were to specify this parameter, your system would print your files immediately, even if you had previously specified SCREEN NONBURST during your current workstation session and had specified SPOOLBURST=NO during SYSGEN.*

CONTINUOUS/PAGE

Specifies the printing mode for any 0791 auxiliary printer connected to the workstation. CONTINUOUS causes output to be printed in continuous mode. That is, output prints continually as in normal printer operation. This option is the default. PAGE causes output to be printed in page mode. That is, the system requests the operator to insert the next page into the printer prior to the printing of each page. Both options are ignored if no 0791 printer is attached to the workstation.

You can enter a SCREEN command that specifies PAGE or CONTINUOUS any time before the print file starts printing. The page mode remains in effect unless changed by another SCREEN command or unless the system IPL procedure is performed again. In the second case, the continuous mode becomes effective. If you alternate between the two modes, you can enter the command before you respond to the forms mount message. If the SCREEN command is entered after a file begins printing, the command is not effective until the next file is printed. Logging off the workstation has no effect on the page mode setting.

```
SI= {TOP   }
    {BOTTOM}
```

Specifies where the emulated system response and input line will appear on the screen. SI=TOP, the default, specifies the top two lines. The system responses appear on line 2 and you enter message responses and unsolicited messages on line 1.

SI=BOTTOM moves the emulated SYSTEM mode message and input line to the bottom of the screen. This command to move the SYSTEM mode to the bottom of the screen does not take effect until you request the SYSTEM mode again.

Using this parameter allows users to switch to SYSTEM mode while reducing the opportunity of causing an SF16 error. The top two lines are destroyed if you use the default (SCREEN SI=TOP). SI=BOTTOM does destroy the bottom two lines and an SF16 error can result, if the cursor is positioned on these bottom lines when the system response area is moved.

HEADER/NOHEADER

Specifies whether the headers printed for an auxiliary printer at a workstation will be printed or suppressed. To suppress them, issue SCREEN NOHEADER after issuing the SCREEN WKSTN command. This suppresses page separators until you issue a SCREEN HEADER command.

Example

```
SCR ROLL,LOWER
```

In this example, screen control is set for scrolling. Lowercase letters remain lowercase and are not translated to uppercase.

The following condition may cause this command to be rejected:

- Incorrect Syntax

The command was misspelled or ambiguous, or the command or parameters were improperly entered.

3.2.9. Terminating a Job at the End of a Job Step (STOP Command)

The STOP command enables you to terminate a job at the completion of the currently executing job step. The STOP command differs from the CANCEL command in that the CANCEL command immediately halts the job, without allowing completion of the currently executing job step. *You may perform a STOP only for jobs executing under your user-id, unless you have been given global control privileges by the system administrator.*

Format

```
STOP∆jobname
```

Parameters

```
jobname
```

Specifies the name of the job you wish to bring to an orderly termination. The job name may be up to eight characters long.

Example

```
ST MYJOB
```

In this example, the job named MYJOB is brought to an orderly termination.

The following conditions may cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were entered improperly.

- No Job Name Entered

  You must enter a jobname to execute this command.

3.2.10. Sending Messages to the System Operator (TELL Command)

The TELL command enables you to send messages not requiring a response to other users or the system operator.

Format

```
         ┌              ┐
TELL△    │ ⎧ user-id ⎫ ,│'text'
         │ ⎩ ALL     ⎭  │
         └              ┘
```

Parameters

`user-id/ALL`

Specifies the user-id of the user to whom you wish to send the message. If you do not specify a user-id, the message will be sent to the system operator. The console, however, has a user-id that you may use in communicating with the system operator; it is $Y$CON. If you wish to send a message to a user who has initiated an ENTER file, enter $Y$MAS as the user-id. If you specify ALL, the message will be sent to all users on the system, as well as the system operator.

`text`

Is the text of the message to be sent to the operator. A comma must separate the text from the user-id. If there is no user-id, you do not need to enter a comma. The text may be a maximum of 88 characters long. Longer messages are rejected. *The text must be enclosed in apostrophes and, therefore, can't contain apostrophes itself unless you enter 2 consecutive apostrophes to represent the apostrophe contained inside your text. For example:*

TELL ALL,’ISN”T THE WEATHER GREAT?’

Example

```
TEL 'PRINTOUT FROM PAYJOB IS NO GOOD'
```

In this example, the user is telling the system console operator that the printout of the specified job (PAYJOB) is unacceptable.

The following conditions may cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, apostrophes were used incorrectly, or the user-ID entered was longer than six characters.

- Messages Too Long

  The message text was longer than 88 characters. The message is rejected.

3.3. Commands to Control Spooling

3.3.1. General

These commands allow you to control the process of *spooling* (simultaneous peripheral operations online). Spooling permits both the high-speed components of your system (such as the central processor) and the low-speed components (such as the printer) to operate at their optimum speed. Spooling acts as the buffer to ensure that high-speed components are not bound by the slow-speed components. In the operation of spooling, input from a low-speed device such as a card reader is collected in the *spool file* on disk for high-speed transfer to the central processor. The high-speed output from the central processor is transferred back to the spool file, from which it can be output through a low-speed device such as a printer or card punch. This is not a complete explanation of the spooling process; it would be inappropriate to undertake a detailed explanation in this manual. For complete information on spooling, refer to the spooling and job accounting concepts and facilities manual.

Note: *You may access only those spooled files created by jobs initiated or running under your user-id. However, if you have the proper security privileges, these commands will act as though they were entered at the system console. They will have access to all spool subfiles in the system.*

3.3.2. Spooling Command Directories and Modifiers

When you enter a command to act upon a spooled file, you also enter information to define the file to the system. The information you enter to define the file is of two types:

1. The spool file directory

2. The spool file modifiers

Spool File Directories

Whether low-speed input or output devices interface directly with the central processor or are buffered by the spool file is transparent to your program. It always considers the input to be coming directly from the low-speed device. Therefore *spooled* files are identified in the *spool* file according to the low-speed device with which they are associated. For example, a file coming originally from a card reader would be identified as being in the card reader (RDR) directory. Note, however, that *diskette input* files are in the RDR directory, while *diskette output* files are in the PUNCH directory. Note also that there is a directory called the LOG directory. This directory contains job log information on jobs running in the system. Job log information includes the job control used to run the job, messages sent to the workstation or console controlling the job, and job accounting information. Table 3-1 lists the spool file directories you may access.

Table 3-1. Spool File Directories

Directory	File Function
ALL	Makes all directories accessible to the command on which it is specified.
LOG	Indicates that the file referenced is a job log file.
PUNCH	Indicates that the file is to be output to either a card punch or a diskette.
PRINT	Indicates that the file is to be output to a printer
RDR	Indicates that the file was originally input from a card reader or diskette.

Spooled File Modifiers

You may further define the characteristics of the file you wish to reference in your command. The spooled file modifiers serve this purpose.

- ACCT=acctno

  Specifies a 1- to 4-character number that is the account number of the job creating or using the file.

- BNUMB=binary jobno

  Specifies a 5-digit binary job number. Used with BEGIN SPL, DELETE SPL, HOLD SPL, PR, PU, and RP commands.

- CART=cartridge-name

  Specifies a 1- to 8-character identification of the print cartridge to be used in the printer specified to print the file referenced.

- DEV=nnnn

  For System 80, model 8 only. Designates the type of printer used for output of the file referenced. The device numbers you are permitted to enter are the 0770 printer, the 0776 (non-SDMA) printer, or the 0789 printer.

- FILE=filename

  Specifies the name of the file. It may be from one to eight characters long.

- FORM=formname

  Specifies the name of the form to be used when printing the file. It may be from one to eight characters long.

- JOB=jobname

  Specifies the name of the job creating or using the file. It may be from one to eight characters long.

- STEP=stepno

  Specifies the number of the job step that created or uses the file. It must be at least three characters long and left-justified with zeros.

- UID=USERID
      =OS3CTR or CENTRAL

  USERID
  Identifies the user on whose behalf the spool subfile was created. This modifier will not be accepted from an interactive user who does not have the required security permission, unless UID= the current logon id. This modifier is from 1 to 6 characters in length.

  OS3CTR or CENTRAL
  Designates subfiles that were directed to a central printer. When entered by an interactive user, only centrally destined files that were created under the current logon id will be found unless that id has been given security privileges.

Note: *If UID= and DEV= are used together, the DEV specification has priority.*

3.3.3. The Output Writer

An output writer is a spooling facility that is responsible for printing and punching spooled output from a job. Under normal processing conditions, an output writer loads automatically and is transparent to a user. When it processes output, it does so according to specifications set at SYSGEN time.

You can, however, manually load an output writer from your workstation. By manually loading an output writer, you can control its mode of operation and its processing criteria. The following function codes are used with the PR/PU and RP spooling commands to control the output writer. See the formats for these commands (3.3.4 and 3.3.5) to learn which function codes are valid under which circumstances.

Function Codes for the Output Writer

$\begin{Bmatrix} \text{BURST} \\ \text{BX} \end{Bmatrix}$

Places the output writer in burst mode. In burst mode, output files are available for processing before a job has terminated. The output writer writes an output data file as soon as the job step that created the file is completed. If BX is entered with file modifiers (3.3.2), the output writer terminates after processing all files that satisfy the modifiers. If BU is entered, the output writer requests another function when more files exist that do not satisfy the modifiers.

BYPASS

Terminates processing of the current file. The current file is closed and the output writer continues processing the next file. Bypassed files can be restarted later.

COPIES,nnn

Sets the number of copies the output writer is to produce for each file it processes. From 1 to 255 copies (nnn) may be specified. If no number is specified, one copy is assumed. The file is closed when processing is completed.

DELETE

Deletes the file being processed and proceeds with the next file to be processed.

DISPLAY

Displays the status of the current file on the workstation screen. The information displayed is:

- File name
- Job name
- Current page (card) number
- Total pages (cards) in file
- Program name

- Job step number
- Number of remaining copies
- Existence of a breakpoint

```
HALT
```

Terminates the output writer after the current file (if any) is processed. If the file being processed has multiple copies, the remaining copies are produced when the output writer is reloaded.

```
HOLD
```

Places the current file in a hold state and begins processing the next file. Files in a hold state are not available for processing until released by the BEGIN command.

```
NBURST
```

Places the output writer in nonburst mode. If specified while the output writer is processing a file, the function does not take effect until file processing is completed.

```
RETAIN
```

Retains the currently active file in a HOLD state in the spool file after it is processed. The retained file is unavailable for additional processing until released via the BEGIN command. (Otherwise, delete the retained file via the DELETE command.)

```
RESTART ⎧,nnn      ⎫
        ⎨,PAGE,nnnn⎬
        ⎩,CARD,nnnn⎭
```

Restarts processing of the currently active file from a number of pages or cards. If no number is specified, the output writer restarts processing from the beginning of the file. If only nnn is entered, file processing is restarted nnn pages or cards back from the current position of file. If PA or CA is entered with nnnn, the file is positioned back to the page or card identified by nnnn.

```
RESTART ⎧,nnn   ⎫
        ⎩,LI,nnn⎭
```

Restarts processing at nnn lines from the current position or at the line number indicated by LI,nnn in the log file being processed.

```
SD
```

Used for debugging purposes only. If specified, the message ENTER SPOOL DEBUG COMMAND is displayed. Enter a debug command (ALL, LOC, PRINT, or RDR) to print the directories of the various spool file queues. When printing is completed, the ENTER SPOOL DEBUG COMMAND is displayed again. Enter another debug command or enter HALT to terminate spool debug.

```
SKIP⎧,nnnn     ⎫
    ⎨,PAGE,nnnn⎬
    ⎩,CARD,nnnn⎭
```

Directs the output writer to skip forward a specific number (nnnn) of pages or cards, or to skip forward to a specific page number (PAGE,nnnn) or card number (CARD,nnnn). After positioning, a request is made for another function.

```
SKIP⎧,nnn   ⎫
    ⎩,LI,nnn⎭
```

Directs the output writer to skip nnn lines from the current position or to skip to the line number indicated by LI,nnn in the log file being processed.

```
STOP[,PAGE]
```

Directs the output writer to stop processing. If PAGE is omitted, the output writer terminates immediately. If PAGE is included, the output writer terminates after printing the complete current page. The file being processed is closed but not deleted. When accessed by another output writer, the file is processed from the point at which it was closed.

3.3.4. Manually Loading an Output Writer (PR/PU)

The PR/PU spooling command allows you to manually load an output writer to print (PR) or punch (PU) spooled files associated with your job. Normally, the output writer is loaded automatically to process the output files from your job. However, under certain circumstances, you might choose to load an output writer yourself. In doing so, you can also control output processing by specifying function codes.

PR/PU is useful when, for example, your output writer normally operates in nonburst mode and you need an output file printed or punched before your job has terminated. In nonburst mode (a SYSGEN option), the output writer won't write an output data file to a device until the job that created the file has terminated and the job's header and log have been written.

You can also use PR/PU to print or punch spooled files that were recovered after a "warm" start. It is important to note, however, that if a device hardware error occurs while your files are being printed or punched, it is up to you to resume processing. When a hardware error occurs, the following message is routed to your workstation:

```
nn sym-id ⎧PR⎫ (did) UNRECOVERABLE OUTPUT ERROR,ENTER I OR FUNCTION.
          ⎩PU⎭
```

did is the device address of the printer or punch where the error occurred. To ignore the error, key in I as a solicited response. Otherwise, enter an output writer function code (3.3.3) like STOP or RESTART.

Format

```
{PR} Δ[function-code][,ACCT=acctno][,BNUMB=binary jobno][,CART=cartridge-name]
{PU}
     [,FILE=filename][,FORM=formname][,JOB=jobname]
```

Parameters

`function-code`

Specifies the output writer's mode of operation and processing criteria. If a function code is omitted, the output writer is loaded in the mode (burst/nonburst) indicated at SYSGEN. See 3.3.3 for a complete list of output writer function codes. The BU and BX function codes allow you to change the output writer's mode of operation. The first time you issue the PR or PU spooling commands during one workstation session (from logon to logoff), BU and BX are the only valid function codes you can choose. Once the output writer starts printing or punching, you can enter the PR or PU command with any other function code to change the output writer's processing criteria.

Note: *Function code keyins cannot exceed 28 characters in length, including commas.*

Examples

```
PR BX,FO=MYFORM
```

The output writer is loaded in burst mode to group all spooled output files associated with the form name specified and then print the groups on a first-in, first-out basis. The output writer terminates when all form name file groups have been printed.

```
PU BU,JO=MYJOB
```

The output writer is loaded to process, in burst mode, all punch files created by MYJOB.

3.3.5. Manually Loading an Output Writer to an Auxiliary Printer (RP)

The RP spooling command allows you to manually load an output writer to print to an auxiliary printer. The auxiliary printer can be connected to either a local or remote workstation.

As we explain in the *Spooling and Job Accounting Operating Guide*, UP-9975, in many cases it's not necessary for you to use the RP command to load an output writer to an auxiliary printer. Normally, your system loads it automatically, as long as you've generated your system to use auxiliary printers and directed your print files to an auxiliary printer prior to the time your system prints your print files.

You direct your print files to an auxiliary printer in one of two ways, depending on what type of program or job you're working with. If you're running an interactive system program, such as EDT, direct your print files to an auxiliary printer through the interactive services SCREEN WKSTN command. If you're running your own jobs, direct your print files to an auxiliary printer through job control. See spooling and job accounting concepts and facilities for details on directing output to an auxiliary printer.

In some cases, however, manually loading an output writer to an auxiliary printer using the RP command is not only desirable but necessary.

The RP is necessary when you've directed any of the output files from your jobs to another user's workstation auxiliary printer. In other words, you included another user's identification on either the // OPTION OUT or // ROUTE statement in the job control for your job. Here, the other user must issue an RP command to start the printing of your files. Printing in this case is not automatic. (Similarly, if you are not the initiator of a job, but output is directed to your auxiliary printer, you must issue an RP command to start printing. To find out whether any output files have been routed to your user-id, use the DISPLAY SPL command.)

Other situations in which you would need to use the RP command might be:

- Your output writer normally operates in nonburst mode, and you need an output file printed before your job terminates. In this case, you could manually load an output writer to your auxiliary printer.
- You want to recover output files after a warm start or to resume printing after an auxiliary printer hardware error.
- You can also use RP to control an output writer's processing criteria by specifying function codes with the command after the output writer has begun printing.
- You need the RP command when you issue an interactive services SCREEN WKSTN command at a workstation that is not connected to an auxiliary printer; then issue either a PRINT command or an EDT LIST command. In this case, you must:

  1. Log off that workstation
  2. Log on under the same user-id at the workstation that is connected to an auxiliary printer
  3. Issue an RP command

  These actions cause your system to print the print files from your interactive system program sessions at your auxiliary printer. Only by performing all three actions can you get your print files printed at the auxiliary printer.

In all cases, remember that the RP command does not work independently; to use the RP command, you must have generated your system to use auxiliary printers and directed your print files to an auxiliary printer prior to the time your system prints your print files.

Notes:

1. *The / / ROUTE and / / OPTION OUT statements have additional DDP parameters not discussed here. You cannot use RP to direct printing to a DDP site. RP applies only to auxiliary printers connected to local or remote workstations.*

2. *Output files that you direct to an auxiliary printer can be secured or unsecured. If a file is secured, the user the output is directed to must be logged on for printing to begin. Secure a file via the / / SPL statement or jproc. See the* Job Control Programming Guide, *UP-9986, for details.*

Format

```
RPΔ[function-code][,ACCT=acctno][,BNUMB=binary jobno][,CART=cartridge-name]
   [,FILE=filename][,FORM=formname][,JOB=jobname]
```

Parameters

`function code`

Specifies the output writer's mode of operation and processing criteria. If a function code is omitted, the output writer is loaded in the mode (burst/nonburst) indicated at SYSGEN. See 3.3.3 for a complete list of output writer function codes. The BX function code lets you change the output writer's mode of operation to nonburst mode and is the only valid function code the first time you issue the RP spooling command during one workstation session (from logon to logoff). Once the output writer starts printing, you can enter the RP command with any other function code to change the output writer's processing criteria.

Examples

```
RP BX,JO=MYJOB
```

In this example, an output writer is loaded to print to an auxiliary printer in burst mode to process the output data files from the job MYJOB.

The following conditions could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were improperly entered.

- Output not Destined for an Auxiliary Printer

  You cannot direct output to an auxiliary printer unless output was destined for it via job control.

3.3.6. Obtaining Spooled File Information (DISPLAY ACT and DISPLAY SPL Commands)

These commands enable you to obtain information about either spooled files being created by the program (DISPLAY ACT) or completed spooled files (DISPLAY SPL). The two commands function in a similar manner and produce similar displays. They enable you to obtain information, such as the name of the job creating the file or files, number of pages or cards created, and the number of copies of the file to be produced upon output to the printer or punch. *You can only display information about files used by jobs created by your user-id, unless you have been given global status privileges by the system administrator.*

DISPLAY ACT Format

```
DISPLAYΔACT ⎡, ⎧ALL  ⎫⎤[,ACCT=acctno][,CART=cartridge-name]
            ⎢  ⎨PRINT⎬⎥
            ⎣  ⎩PUNCH⎭⎦

     ⎡,DEV= ⎧770⎫⎤ * [,FILE=filename][,FORM=formname][,JOB=jobname][,STEP=stepno]
     ⎢      ⎨776⎬⎥
     ⎣      ⎩789⎭⎦
```

DISPLAY SPL Format

```
DISPLAYΔSPL ⎡, ⎧ALL  ⎫⎤ [,ACCT=acctno][,CART=cartridge-name]
            ⎢  ⎪LOG  ⎪⎥
            ⎢  ⎨PRINT⎬⎥
            ⎢  ⎪PUNCH⎪⎥
            ⎣  ⎩RDR  ⎭⎦

     ⎡,DEV= ⎧770⎫⎤ * [,FILE=filename][,FORM=formname][,JOB=jobname][,STEP=stepno]
     ⎢      ⎨776⎬⎥
     ⎣      ⎩789⎭⎦
```

Note: *If you do not enter a directory, all directories will be displayed.*

* Only for non-SDMA devices on the System 80, model 8.

The DISPLAY SPL and DISPLAY ACT commands display information in a series of single lines. The first display line gives you a list of the number of files the system has found meeting your requirements, the number of pages produced, and the number of card images produced. For DISPLAY ACT, these totals represent files currently being created; for DISPLAY SPL, they represent the completed files. The first display is as follows:

```
24 DI1642 DI01 status FILES=ffff PAGES=ppppp CARDS=ccccc
```

where:

`status`
Specifies whether the line is displaying a list of files *QUEUED*, in the *HOLD* state, or *IN-PROGRESS* being processed by the output writer. If RDR is specified as the spool queue, IN-PROGRESS specifies that files are being processed by programs.

`fffff`
Represents the number of files.

`ppppp`
Represents the total number of pages. *Log files are not included in the page count.*

`ccccc`
Represents the number of card images.

This display will be produced for each of the three statuses containing one or more files. If there are more than one, the system will display them to you *one at a time. You must press the XMIT key to view the remaining displays.*

After you have seen these displays, the system will ask you if you want to see further details of the spooled files requested in your DI ACT or DI SPL command. If you entered a DI ACT command, the following line will be displayed:

```
25?DI1642 DI02 SPOOL FILE DETAILS? ***Y,N,***
```

If you entered a DI SPL command, the following line will be displayed:

```
26?DI1642 DI02 SPOOL FILE DETAILS? ***Y,N,Q,H,I,S,SQ,SH,SI***
```

where:

Y

Specifies that the system is to display all spooled file details.

N

Specifies that the display should not be continued; no spooled file details should be displayed.

Q

Specifies to display all queued files.

H

Specifies to display all files being held.

I

Specifies that all files currently being processed by the output writer be displayed. If RDR is specified as the spool queue, I specifies that all files currently being processed by programs be displayed.

S

Specifies that you wish to see an abbreviated display of all files.

SQ

Specifies that you wish to see an abbreviated display of all queued files.

SH

Specifies that you wish to see an abbreviated display of all the files being held.

SI

Specifies that you wish to see an abbreviated display of all files in-progress.

You respond by keying in one of these nine choices.

If you respond with N, the display and command terminate. If you respond with Y, Q, H, or I, and a queue other than RDR was specified, the system displays the following:

```
24 DI1642 DI04  JOBNAME  jobname  FILE  filename  STATUS  file  status

25 DI1642 DI05  TOTAL  ⎧PAGES⎫ nnnnn  REMOTE-ID  xxxxxx  COPIES  nnn
                       ⎨CARDS⎬
                       ⎩LINES⎭

26 DI1642 DI06  STEP-NUMBER  nnn  DEVICE-TYPE  xxxxx  BREAKPOINT  ⎧Y⎫
                                                                  ⎩N⎭

27 DI1642 DI07  BAND-NAME  xxxxxxxx  FORM-name  xxxxxxxx  ACCT  xxxx
28 DI1642 DI07A JOB-NAME nnnnn
29?DI1642 DI08  PROGRAM-NAME  xxxxxxxx  CONTINUE?  ***Y,N***
```

If you respond with Y, Q, H, or I and specify the RDR queue, you receive the following display:

```
30 DI1642 DI09 RDR FILE nnnnn CARDS  LBL xxxxxxxxxxxxxxxxx VOL vvvvv

31?DI1642 DI10 CONTINUE? ***Y,N***
```

Note: *The VOL display appears only when the RDR file was spooled in from a diskette.*

where:

`JOBNAME jobname`

Is the name of the job that created the spooled files.

`FILE filename`

Is the name of the file whose characteristics are being displayed.

`STATUS`

Is the status of the file whose characteristics are being displayed (QUEUED, HOLD, IN-PROGESS).

```
TOTAL⎧PAGES⎫ nnnnn
     ⎨CARDS⎬
     ⎩LINES⎭
```

Is the total number of pages, cards, or lines.

REMOTE-ID
Is the user-id of the workstation from which the job producing the spooled output was initiated.

COPIES nnn
Is the number of copies of the file to be made when it is transferred to the output device (printer, punch, etc.)

STEP-NUMBER nnn
Is the number of the job step within the job specified by the job name.

DEVICE-TYPE xxxxx
Is the type of output device the file will be sent to (printer, punch, etc.)

BREAKPOINT
Informs you whether or not the file has been breakpointed.

BAND-NAME xxxxxxxx
Is a name given to the print band to be used by the printer that will print the file. For example, a band name of 48-BUS. would indicate the printer is to use a 48-character standard business print band. Band names are initially specified at SYSGEN time. This name is the same as the cartridge name that you specified.

FORM-NAME
Is the name of the form to be used on the printer.

ACCT xxxx
Is the account number of the job that created the file.

VOL
Is the volume serial number of the diskette read from.

LBL
Is the label of the diskette read from.

These lines of information are displayed one at a time, and you must press the XMIT key after each line is displayed, to view the next line. If you respond to CONTINUE? on line 108 with Y, the displays will continue with other files. If you respond with N, the display terminates.

If you responded to line DI02 (SPOOL FILE DETAILS........) with S, SQ, SH, or SI, the following display will be produced:

```
32 DI1642 DI11  JOB=jobname  PROG=progname  FO=formname ⎧PA⎫ =nnnnn ST=nn
                                                        ⎨CA⎬
                                                        ⎩LI⎭
```

Note: *ST=nn indicates the step number of the job that created the file.*

The system produces five DI11 lines on the screen (or however many, up to five, needed to display information for files that fit your criteria) and then asks you if you wish to continue:

```
33?DI1642 DI12  CONTINUE SUMMARY?  ***Y,N***
```

Your entry of Y continues the display. An entry of N terminates the display.

If you responded to line DI02 (SPOOL FILE DETAILS.....) with S, SQ, SH, or SI and the RDR directory was specified, the following display is produced:

```
34 DI1642 DI09  RDR FILE nnnnn CARDS  LBL xxxxxxxxxxxxxxxxx  VOL vvvvv
```

The system produces up to five DI09 lines and then asks you if you wish to continue by displaying the following message:

```
35?DI1642 DI12  CONTINUE SUMMARY?  ***Y,N***
```

Note: *The VOL display appears only when the RDR file was spooled in from a diskette.*

If no files exist that fit the criteria you entered with the command, the system will display the following:

```
36 DI1642 DI03  SPOOL FILE EMPTY
```

Example

```
DI SPL, PR,FILE=JOBCOST
```

This example causes the display of information about a completed file named JOBCOST, residing on the printer spool queue.

The following condition may cause this command to be rejected:

- Incorrect Syntax

The command was misspelled or ambiguous, or the command or parameters were improperly entered.

3.3.7. Holding Spooled Files (HOLD SPL Command)

The HOLD SPL command enables you to place spooled files in a "hold" state. In the hold state, the files are unavailable for processing. To make them available, they must be released by using the BEGIN command (3.3.8). *You may place only completed spooled files in the hold state from the workstation, and you may hold only those files created by jobs running under your user-ID, unless you have been given global control privileges by the system administrator.*

Format

```
HOLDΔSPL  ⎡ ⎧ALL    ⎫⎤[,ACCT=acctno][,BNUMB=binary jobno][,CART=cartridge-name]
          ⎢ ⎪PRINT  ⎪⎥
          ⎢,⎨PUNCH  ⎬⎥
          ⎢ ⎪LOG    ⎪⎥
          ⎣ ⎩RDR    ⎭⎦

 ⎡,DEV=  ⎧770⎫⎤*[,FILE=filename][,FORM=formname][,JOB=jobname][,STEP=stepno]
 ⎢       ⎨776⎬⎥
 ⎣       ⎩789⎭⎦
```

When you enter the HOLD SPL command, the following message will be displayed to you:

```
45 HO1234 HO01 xxx.SPOOL FILES HELD
```

where:

xxx
: Is the number of spooled files held by your command.

Example

```
HO SPL,PRINT,CART=48-SCI
```

In this example, all print spooled files that require the use of a 48-character scientific print cartridge are held.

* Only for non-SDMA devices on the System 80, model 8.

The following condition could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were improperly entered.

3.3.8. Releasing Held Spooled Files (BEGIN SPL Command)

The BEGIN SPL command enables you to release spooled files being held by a HOLD SPL command. This command can release completed spooled files and spooled files held by the //SPL job control statement. This command causes the output writer to be loaded and placed in burst mode. However, an output writer called in burst mode from a workstation does not take over the printer. It waits its turn for the printer and then prints the files specified. *You may release only those files created by jobs running under your user-ID, unless you have been given global control privileges by the system administrator.*

If a job is initiated from a workstation and the spool file is destined for an auxiliary printer connected to that workstation, this command loads the RP output writer in the burst mode for the files associated with the user-id. The RP output writer is loaded according to the parameters entered in the BEGIN SPL command when the spool file is released.

Format

```
BEGINΔSPL, ⎡⎧ ALL   ⎫⎤[,ACCT=acctno][,BNUMB=binary jobno][,CART=cartridge-name]
           ⎢⎪ LOG   ⎪⎥
           ⎢⎨ PRINT ⎬⎥
           ⎢⎪ PUNCH ⎪⎥
           ⎣⎩ RDR   ⎭⎦

     ⎡,DEV= ⎧770⎫⎤*[,FILE=filename][,FORM=formname][,JOB=jobname]
     ⎢      ⎨776⎬⎥
     ⎣      ⎩789⎭⎦

     [,STEP=stepno]⎡,OUT= ⎧did⎫⎤
                   ⎣      ⎩NO ⎭⎦
```

* Only for non-SDMA printers on the System 80, model 8.

Note: *The OUT parameter is used only with the BEGIN SPL command. You use it to specify the designated device that the output is to be printed on (did) or to specify that the output writer is not to be loaded. If OUT=did is specified, ALL or RDR cannot be specified as the directory. OUT=did may only be specified for the log, print, or punch queues. If NO is specified, the command keyin can be up to 60 characters in length, including commas.*

When you enter the BEGIN SPL command, the following message will be displayed to you:

```
46 BE1234 BE01   xxx SPOOL FILES RELEASED
```

where:

xxx

Is the number of spooled files released by your BEGIN SPL command.

Note: *The action taken when a BE SPL command releases a held spool subfile destined for an RP output-writer can be as follows:*

- *The console releases the file from the held state, but does not call an auxiliary output writer.*
- *The workstation initiating the job without an auxiliary printer physically attached calls an RP output-writer, but cannot print the file.*
- *The workstation initiating the job with an auxiliary printer physically attached prints the job.*
- *The workstation specified in / / ROUTE calls an auxiliary output writer and prints the file.*
- *Calling BE SPL from another workstation than the one specified in the / / ROUTE calls an auxiliary output writer, but the file is not printed.*
- *Loading a burst output writer after a BE SPL command prints any subfile with the user-id matching the selected criteria.*

Example

```
BE SPL,PRINT,CART=48-SCI
```

In this example, print files requiring a 48-character scientific print cartridge, which had been held (see the example of the HO SPL command in 3.3.7), are released.

The following condition could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were improperly entered.

3.3.9. Deleting Spooled Files (DELETE SPL Command)

The DELETE SPL command enables you to delete spooled files from spooled file directories. You may delete only completed files, that is, those that are not being processed by an output writer or user program. *You may delete only the files created by jobs running under your user-id.*

Format

```
DELETEΔSPL, ⎧ALL    ⎫[,ACCT=acctno][,BNUMB=binary jobno][,CART=cartridge-name]
            ⎪LOG    ⎪
            ⎨PRINT  ⎬
            ⎪PUNCH  ⎪
            ⎩RDR    ⎭
     ⎡,DEV= ⎧770⎫⎤*[,FILE=filename][,FORM=formname][,JOB=jobname][,STEP=stepno]
     ⎢      ⎨776⎬⎥
     ⎣      ⎩789⎭⎦
```

Note: *There is no default value for spool directories in this command. You must enter a directory.*

When you enter the DELETE SPL command for a complete directory or ALL is specified, the following message is displayed:

```
DE05  DELETING ENTIRE xxxxx QUEUE. CONTINUE  (Y,N)
```

where xxxxx is the name of the queue to be deleted. This message acts as a precaution against deleting the entire spool file or a particular queue in the event that an error was made in the command keyin.

Enter Y if the command keyin is correct; enter N if it is incorrect.

* Only for non-SDMA devices on the System 80, model 8.

If Y is entered, the spool subfiles are deleted and the following message is displayed:

```
DE01  xxx SPOOL FILES DELETED
```

where xxx is the number of spool files deleted.

If N is entered, the spool subfiles are not deleted and the system displays a DE01 message which indicates that no spool files were deleted.

Example

```
DE SPL,PRINT,CART=48-SCI
```

In this example, all print spooled files requiring the use of a 48-character scientific print cartridge are deleted.

The following condition could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were improperly entered.

3.3.10. Changing Device Type and/or the Number of Copies for Spooled Files (CH SPL Command)

You use the CH SPL command to alter the device type and/or the number of printed copies of a spooled file. The parameters changing the copies and/or devices are required since there are no defaults. *You may change the device type and/or the number of copies for spooled files created by jobs running under your user-id only, unless you have been given global control privileges by the system administrator.*

Format

```
CHANGEΔSPL, ⎧ALL  ⎫[,modifier-1 ... modifier-n] [,COPIES=nnn]
            ⎨LOG  ⎬
            ⎩PRINT⎭

    ⎡,DVC=⎧770    ⎫⎤ ⎡                           ⎤ ⎡                ⎤
    ⎢     ⎪776    ⎪⎥ ⎢,DVC=AUX,ID= ⎧*      ⎫      ⎥ ⎢,ID= ⎧*      ⎫   ⎥
    ⎢     ⎪PPC    ⎪⎥ ⎢             ⎩user-id⎭      ⎥ ⎢     ⎩user-id⎭   ⎥
    ⎢     ⎨ANY    ⎬⎥ ⎣                           ⎦ ⎣                ⎦
    ⎢     ⎪CLASS1 ⎪⎥
    ⎢     ⎪CLASS2 ⎪⎥
    ⎣     ⎩CLASS3 ⎭⎦
```

This command changes closed spool subfiles of either queued or held status, but not subfiles of active status.

Parameters

```
{ALL  }
{LOG  }
{PRINT}
```

Specifies the directories you want to change the device type or number of copies for. ALL includes LOG and PRINT queues only.

```
[modifier-1 ... modifier-n]
```

Uses any of the modifiers listed for the spool command. By leaving criteria blank, you base the search for spool files on the user issuing the command. (See section 3.3.2 for the list of modifiers.)

```
copies=nnn
```

Number of copies can be between 1 and 255.

```
DVC= {770   }
     {776   }
     {PPC   }
     {ANY   }
     {CLASS1}
     {CLASS2}
     {CLASS3}
```

Spool parameters are not hard assigned to a device specified on the DVC parameter, but logically assigned to a device type. Using the DVC parameter permits you to logically switch the files spooled to print on another device or class of device.

```
DVC=AUX,ID= {*      }
            {user-id}
```

This parameter enables printing on an auxiliary printer of the user-id. The system displays an error message if the user-id is not specified with this parameter.

```
ID= {*      }
    {user-id}
```

Use this parameter to specify a change of user ownership.

When you enter the CH SPL command, the following message is displayed:

```
CH01 nnn    SPOOL FILES CHANGED
```

where:

nnn
: Is the number of spooled files changed by your CH SPL command.

Examples

```
CH SPL,ALL,DVC=PPC
```

This example sends all log and print files for the user to the device type PPC printer.

```
CH SPL,ALL,JOB=TEST,DEV=770,DVC=PPC
```

This example changes only the files originally destined for the 770 printer. (The original JCL indicated by DVC 28.) It directs the spooled files to a PPC.

```
CH SPL,ALL,JOB=YOURJOB,DVC=CLASS2
```

This example redirects all spooled output to a class 2 PPC printer.

```
CH SPL,ALL,JOB=YOURJOB,DVC=ANY
```

This example enables printing of spooled files on any printer.

```
CH SPL,ALL,JOB=MYJOB,DVC=AUX,ID=*
```

This example redirects the spooled output to the aux-printer attached to the current workstation/terminal. The original spool file could have been created without using the // ROUTE in the // DVC 20 // LFD sequence for the printer.

```
CH SPL,ALL,JOB=MYJOB,DVC=AUX,ID=YOURID
```

This example redirects the spooled output to the aux-printer attached to the workstation/terminal of the user indicated by the parameter ID=. The original spool file could have been created without using the // ROUTE in the // DVC 20 // LFD sequence for the printer.

```
CH SPL,PR,JOB=MYJOB,COPIES=2
```

This example changes the number of copies requested for one or more spooled files currently queued or on hold. This overrides the number of copies specified in the JCL statement.

The following error condition causes the CH SPL command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command parameters were improperly entered.

3.3.11. Breakpointing Spooled Files (BRKPT Command)

The BRKPT command enables you to close one or more files and make them available to an output writer for printing or punching. The remainder of the file created after you enter the BRKPT command is placed in a new file. *You may breakpoint only the files created by jobs running under your user-id, unless you have been given global control privileges by the system administrator. Files which are to be placed on a diskette may not be breakpointed.*

Format

```
BRKPTΔ {P} , {PR} [,ACCT=acctno][,CART=cartridge-name] [,DEV= {770} ]*
       {I}   {PU}                                      [      {776} ]
                                                       [      {789} ]

      [,FILE=filename][,FORM=formname],JOB=jobname[,HOLD]
```

Parameters

P/I

Specifies whether you want the file breakpointed immediately (I) or at the end of the currently completing page (P). If, through the next parameter, you specify that you wish to breakpoint a file for *punching*, the file will be breakpointed immediately, whether you specify P or I.

PR/PU

Specifies the type of file you wish to breakpoint. PR indicates you wish to breakpoint a printer file; PU indicates you wish to breakpoint a punch file.

When you enter the BRKPT command, one of the following messages will be sent to you to inform you of the status of your command:

```
42 BR1132 FILE filename FOR JOB jobname HAS BEEN BREAKPOINTED
```

This message indicates that your breakpoint has been successful.

```
43 BR1132 FILE filename FOR JOB jobname UNABLE TO BE BREAKPOINTED
```

This message indicates that an I/O error has prevented successful breakpointing of the job.

* Only for non-SDMA devices on the System 80, model 8.

```
44 BR1132 JOB NAME NOT SPECIFIED FOR BREAKPOINT
```

You did not enter a job name as part of the BRKPT command. Breakpoint cannot be done without a job name.

```
45 BR1132 BREAKPOINT REQUEST INVALID
```

You attempted to breakpoint a LOG, or RDR file, or a file created by a job running under another user-id.

```
46 BR1132 FILE NOT AVAILABLE FOR BREAKPOINT
```

The system is not able to find the file specified to be breakpointed.

```
47 BR1132 BREAKPOINT ALREADY IN PROGRESS FOR JOB jobname.
```

A previously entered breakpointing operation is in progress involving the job you wish to breakpoint. Your breakpointing operation cannot begin until the previous operation has completed.

```
48 BR1132 JOB NOT AVAILABLE FOR BREAKPOINT
```

Either the job you wish to breakpoint is not in the system or is running under Data Base Systems, a data base system developed by Unisys for European users.

Example

```
BR I,PU,JOB=MYJOB
```

In this example, a punch file currently being created by the job named MYJOB is to be breakpointed.

The following condition could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were improperly entered.

3.4. Commands Used to Perform Utility Routines

The commands contained in this section enable you to interactively perform utility routines.

Utility routines perform the "housekeeping" chores that need to be done on every data processing system. These commands simplify the housekeeping chores by removing the need to create job control streams to run the utility routines. Utility routines perform such functions as erasing files to make more storage space available, allocating files for future use, making printed and punch card copies of files, and obtaining information about the status of files and listings of the files currently stored in the system.

The utility routines described in this section are not the only such routines available to you. Also available from the workstation are the DATA utilities, which enable you to work with the contents of data files on the system. See 4.3 for more information on the DATA utilities.

3.4.1. File Parameters

If you wish to use a command that acts upon a file (allocating, copying, erasing), you must define the file to be acted upon. You do this with a set of file parameters, entered with the command. The file parameters are entered as keywords. The following is an example of a keyword parameter:

```
VSN=volume
```

The keyword, VSN, defines the parameter to the system as the volume serial number of the file being referenced. The equal sign (=) tells the system that the next group of characters is the actual parameter. After the equal sign, you enter the actual volume serial number of the file being referenced. Thus, to enter this parameter for a volume with the volume serial number PAY346, you would key in VSN=PAY346.

In many cases, the first two or three letters of a keyword are underlined. This means that you need to enter only the underlined letters, not the entire keyword. If the keyword is not underlined, you must enter the entire keyword. You may always enter any whole keyword, and the system will accept it. Each keyword parameter must be separated from the one preceding it by a comma. The first keyword parameter must be separated from the command by a single space.

Many command formats include not only file parameters but other parameters, appearing after the keyword parameters, at the end of the parameter string. These other parameters are termed *command options,* and serve to modify the activity of the command with which they are associated. They must be separated from the keyword parameters by a single space, and from each other by a comma. They are defined with the commands they modify.

The keyword parameters are defined in the following section. They are listed alphabetically. Refer to the format of each command to find out which keyword parameters are needed for that particular command.

Note: *Some of the parameters may also be entered in a positional format. For more information on using the positional format, refer to Appendix D.*

3.4.2. Keyword Parameters

`ACCT=acct`

Specifies the account number of the job that created the spool file you wish to access. The account number may be from one to four alphanumeric characters long.

`ALL=` $\begin{Bmatrix}\text{YES}\\\text{NO}\end{Bmatrix}$

Specifies whether or not all spool files with the specified parameters are to be processed. If you specify YES, all the spool subfiles with the specified parameters will be processed. If you specify NO, only the first spool file found with the specified parameters will be processed.

`BFSZ=n`

For disk files:

Specifies the minimum I/O buffer size for the MIRAM file you want to access. Specifying a larger-than-minimum buffer size could reduce the number of disk I/O calls, thus causing your command to run faster. Not specifying a buffer size will cause this parameter to default to a buffer size appropriate for the file you are accessing.

For tape files:

Specifies the block size within a tape file.

`BKNO=` $\begin{Bmatrix}\text{YES}\\\text{NO}\end{Bmatrix}$

When you specify this parameter for a tape output file, it causes block numbers to be created on the tape as the file is being created. When you specify this parameter for a tape *input* file, it causes the block numbers of the file to be checked.

```
CONTIG= { YES }
        { NO  }
```

Specifies whether the file to be created should be allocated contiguous or non-contiguous space. YES causes the file to be allocated contiguous space; NO causes the file to be allocated noncontiguous space. File space on data-set-label (DSL) diskettes must be contiguous; therefore, take the default YES when allocating space on DSL diskettes. *This parameter is specified only when creating a new file.*

```
COPIES= { n }
        { 1 }
```

Specifies the number of copies you wish made of a spool file. This parameter applies only to spool files created by commands such as the PRINT command. This parameter takes effect when the spool file is processed by an output writer and sent to the peripheral device for output. For example, specifying COPIES=2 causes two copies of the file to be made.

You may make up to 255 copies of a file.

```
DEVICE= { did      }
        { DISKETTE }
        { DISK     }
        { PRINT    }
        { PUNCH    }
        { RDR      }
        { TAPE     }
```

Specifies the type of device you wish to use to read from, or write to, as a sequential file. did specifies the device address (did) of the device you wish to use. The first digit is the channel number; the second and third, the hardware address. The other choices, DISKETTE...TAPE, specify the type of device to be used, but not a specific device. If you do not specify a device, the parameter will default to disk. If you are using a disk or diskette and specify its volume serial number, you do not need to enter the DEVICE= parameter. If the volume you want to use is mounted, the system will find it.

```
EXTEND= { YES }
        { NO  }
```

Specifies whether the contents of a file are to be either overwritten or merged with new data. If you take the default YES, the existing file remains intact and the new data is added to the end. If you specify NO, the data is overwritten, but the file characteristics are preserved. To overwrite a file using new file characteristics, use the INIT=YES parameter instead of EXTEND. (The default values for EXTEND and INIT specify the same condition. The two parameters differ in how a file is overwritten with new data.) The EXTEND parameter is ignored if you specify INIT=YES. EXTEND applies only to MIRAM data files and tape files.

```
FILENAME= { filename   }
          { 'filename' }
          { "filename" }
```

Specifies the name of the file being referenced. In all cases except two, the file name must be that of an existing file. The exceptions are file names entered with the ALLOCATE command and file names entered for files you are creating through the COPY command. In both cases, the names entered must be names you create. Physical file names may be from 1 to 44 alphanumeric characters long. Logical file names (for spool files) may be from 1 to 17 characters long. Tape file names may also be from 1 to 17 characters long. *The file name must be enclosed in either quotation marks or apostrophes if there are spaces, commas, or parentheses embedded within the file name.*

```
HOLD= { L }
      { N }
      { Y }
```

Specifies whether or not a spooled file has been placed in a HOLD state. Files are held in two ways. The first is through the use of a HOLD command, from the workstation or system console, or the inclusion of a HOLD job control parameter. The second is by specifying the file to be retained after processing. A file placed in a HOLD state by the first method has not been processed. A file placed in a HOLD state by the second method has been processed once. If the file you are referencing is a log file, and is in a HOLD state, enter L. If the file you are referencing is a type other than a log file and is in a HOLD state, enter Y. If the file you are referencing, log or other type, is *not* in a HOLD state, enter N. If you are accessing a file on the reader queue (RDR), the HOLD option is forced to NO. If you omit the HOLD option for any other type of spool file, all HOLD options will be tried in order: HOLD=NO, HOLD=YES, HOLD=LOG. Then, any file meeting the specified file characteristics, including the HOLD option, is located. Retained input files are not placed on HOLD.

```
INC= { n }
     { 1 }
```

Specifies the number of cylinders of disk storage space to be added to a file when it fills its original allocation of space and requires further space. *This parameter does not apply to files on data-set-label diskettes. DSL diskettes cannot be extended.*

$\underline{\mathtt{INIT}}\mathtt{=}\left\{\begin{array}{l}\mathtt{YES}\\ \mathtt{NO}\end{array}\right\}$

Specifies whether the contents of a file are to be overwritten with new data being added. If you specify NO (the default), the old information remains intact and the new data is added to the end of the file. If you specify YES, the original file contents are overwritten with the new data, but the original file characteristics are not preserved. (The only exception would be if the original file was created by using the default values for all the file parameters.) INIT assumes the default values for all file parameters. To overwrite a file using the old file characteristics, use EXTEND=NO, not INIT. Otherwise, use INIT and specify your new file parameters. Init applies only to MIRAM data files and tape files.

$\underline{\mathtt{JO}}\mathtt{B=jobname}$

Specifies the name of the job that produced the spool file you wish to access. The job name may be from one to eight alphanumeric characters long.

$\mathtt{KEYi=}\left\{\begin{array}{l}\mathtt{n:m}\\ \left(\mathtt{n:m,}\left\{\begin{array}{l}\mathtt{DUP}\\ \mathtt{NDUP}\end{array}\right\}\mathtt{,}\left\{\begin{array}{l}\mathtt{CHG}\\ \mathtt{NCHG}\end{array}\right\}\right)\end{array}\right\}$

Specifies the starting and ending column positions of a key (i=1-5). You may repeat this parameter for as many of the five keys you have available to you when creating a file. If you use this parameter with an existing file, your specifications must match those of the present file. DUP/NDUP specifies whether or not duplicate keys are allowed. CHG/NCHG specifies whether or not keys may be changed.

$\underline{\mathtt{KEYNO}}\mathtt{=}\left\{\begin{array}{l}\mathtt{n}\\ \mathtt{0}\end{array}\right\}$

Specifies the number of the key to be used to access a MIRAM file. n may equal 1 to 5.

$\underline{\mathtt{MO}}\mathtt{DULE=modulename}$

Specifies the name of the module being referenced. It may be from one to eight alphanumeric characters long.

$\underline{\mathtt{Q}}\mathtt{UEUE=}\left\{\begin{array}{l}\mathtt{LOG}\\ \underline{\mathtt{PR}}\mathtt{INT}\\ \underline{\mathtt{PU}}\mathtt{NCH}\\ \mathtt{RDR}\end{array}\right\}$

Specifies the spool file directory of the spool file you are referencing. This parameter is valid only when referencing a spool file. You may enter LOG, PRINT, PUNCH, or RDR. LOG indicates that the file is in the log spool directory. PRINT indicates that the file is in the printer spool directory. PUNCH indicates that the file is in the card punch spool directory. RDR indicates that the file is in the card reader spool directory.

```
RCB= { YES }
     { NO  }
```

Specifies whether or not a MIRAM file should be created with a record control byte.

```
RCFM= { FIX    }
      { VAR    }
      { FIXUNB }
      { FIXBLK }
      { VARUNB }
      { VARBLK }
      { UNDEF  }
```

Specifies the record format of a file. For a MIRAM file or a unit record file, you may specify either FIX or VAR. For a tape file, you may specify any of the others. This parameter applies only to tape, unit record, and MIRAM files. If you enter this parameter for an existing file, it must match the present record format of the file. For more information on record formats, refer to the *Consolidated Data Management Programming Guide*, UP-9978.

```
RCSZ=n
```

Specifies the record size of the file or module being accessed. The default value of this parameter is based on the type of file or module you want to access. The following table gives the default values:

Parameter	Default Value
Library modules	128 bytes
MIRAM files	256 bytes (or record size of existing file)
Tape files	256 bytes (or record size of existing file)
Card files	80 bytes
Printer files	132 bytes
Diskette files	Same as MIRAM files if recorded in format-label mode; 128 bytes if recorded in data-set-label mode.

```
RDPASS=password
```

Specifies a password used to control read access to the file being referenced. A password is required if the file is listed with a read password in the catalog file. If the file referenced is to be cataloged, you must specify passwords if you want the file to be only accessible through the passwords. Passwords may be from one to six alphanumeric characters long. You may specify that a file have both read and write passwords, or only one or the other, or no passwords at all.

$\text{\underline{SA}T=}\begin{Bmatrix}\text{YES}\\\text{NO}\end{Bmatrix}$

Specifies whether the file being created should be a SAT (system access technique) or a MIRAM library file. If you are creating a library file, you must specify YES if you want the system to allocate a SAT file. Otherwise, the system will allocate a MIRAM library file. You should specify a SAT file when the program to be placed in the file is to be compiled, linked, or in some way accessed by the system.

$\text{\underline{SCS}Z=}\begin{Bmatrix}\text{n}\\\text{256}\end{Bmatrix}$

Specifies the sector size of the MIRAM file. This parameter is specified only when accessing a file on a volume mounted on a *selector channel* device. The following are selector channel devices:

8430 disk drive

8433 disk drive

Notes:

1. *These devices are available on the System 80, model 8 only.*
2. *This keyword defines the sector size of the disk pack when creating a file; it must match the file for an existing file.*

$\text{\underline{SI}ZE=n}$

Specifies the size of a new file to be allocated. The value of n specifies number of cylinders for disk files and number of blocks for diskette files. This parameter is specified only when creating a new file.

$\text{\underline{SK}IP=}\begin{Bmatrix}\text{n}\\\text{0}\end{Bmatrix}$

Spacifies the number of spool files, with parameter values identical to those specified, that are to be skipped before accessing a spool file for processing. The default value of 0 indicates that the first file found matching the specified parameters is accessed.

$\text{\underline{TY}PE=}\begin{Bmatrix}\text{module-type}\\\text{S}\end{Bmatrix}$

Specifies the type of module being referenced. For SAT files, the types permitted are source (enter S), macro (enter M), procedure (enter P), proc name (PN) load (enter L), or object (enter O).

Note: *A specification of* L *means both blocked and unblocked load modules.*

For MIRAM files, you may specify format (enter F), saved job control stream (enter J), screen format (enter FC), menu (enter MENU), help screen (enter HELP), or any other type available on your system. You may create your own MIRAM module types, identifying them with a 1- to 4-character type. The MIRAM module types can serve as qualifiers for the modules they are associated with.

`VSN=volume`

Specifies the volume serial number of the volume on which the file you are referencing is located. The volume serial number is required if the file is *not* cataloged. The volume serial number may be from one to six alphanumeric characters long. The VSN for SYSRES is RES.

Note: *You may reference system files (those with file names of $Y$XXX) without specifying a volume serial number. The system assumes the files are on the SYSRES disk volume.*

`WRPASS=password`

Specifies a password needed to control write access to the file being referenced. A password is required if the file is listed with a password in the catalog file. If the file referenced is to be cataloged, you must specify passwords if you want the file to be accessible only through the passwords. Passwords may be from one to six alphanumeric characters long. You may specify that a file have both read and write passwords, or only one or the other, or no passwords at all.

3.4.3. Allocating Files (ALLOCATE Command)

The ALLOCATE command enables you to allocate files interactively without using job control statements. The ALLOCATE command reserves space for a file on a disk or diskette of your choosing, and identifies the reserved space for use by the file you create. The parameters entered with the command permit the system to reserve enough space for your file and to provide for increasing the space reserved. This increase is performed if you wish to add more data to the file after the original allocation of space is used up. You may allocate different types of files, depending on the hardware you use. *You may not allocate spooled files or tape files with this command. You may only allocate disk or diskette files.*

The two types of files you can allocate are MIRAM and SAT files. Data files, menu, HELP, saved, and screen format modules are allocated as MIRAM files, and program library files are allocated as SAT files. If you are using diskettes, they can be recorded in either DSL or format label (FL) mode. For DSL diskettes, enter MI as the file type; give the SIZE= parameter in number of blocks. (You cannot specify a block size. It is assumed to be 256 bytes. Therefore, if your DSL diskette is formatted in 128-byte blocks, you will get two 128-byte blocks for every block you allocate.) *DSL diskette files cannot be extended; therefore, any INC= specification is ignored.* FL diskettes are accessed in the same way as disks. Therefore, they can be allocated as either MIRAM (MI) or SAT (ST) files. The INC= and SIZE= parameters are given in cylinders.

Note: *To allocate DSL diskettes as basic data exchange (BDE), or to allocate a file with an expiration date, use the / / EXT job control statement, not the ALLOCATE command.*

The ALLOCATE command issues a message to you, informing you when it has completed processing. You may use more than one line of the workstation screen to enter this command and its associated parameters. To do this, place a dash (-) as the last character in the first line of the command. The system recognizes the dash as a continuation character and asks you (in a message) for further input. You may use as many lines of the screen as you wish; just place a dash at the end of every line except the line on which the parameter string ends.

Format

```
ALLOCATEΔ{ST} ,FILENAME= {filename  } [,RDPASS=password][,WRPASS=password]
         {MI}            {'filename'}
                         {"filename"}

     ,VSN=volume [,CONTIG= {YES} ] [,INC= {n} ] ,SIZE=n
                 [         {NO } ] [      {1} ]
```

Command Option

```
{ST}
{MI}
```

Specifies the type of file you wish to allocate. Enter ST for SAT library files and MI for MIRAM data files.

Example

```
AL MI,FILENAME=MIRAMFILE,VSN=PACK01,INC=5,SIZE=10
```

In this example, a MIRAM file named MIRAMFILE is to be allocated. The file is to be allocated on the volume that has a volume serial number of PACK01. Initially, 10 cylinders of disk space are allocated to the file; as more space is required, it is allocated in increments of 5 cylinders.

The following conditions could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were improperly entered.

- File Already Allocated

  A file with the same name as the file you are attempting to allocate has already been allocated.

- No Room for File

  There is not enough space left on the volume you specified for the size file you wish to allocate.

- Invalid Password

  The password you entered is not valid.

3.4.4. Adding and Modifying Library Module Comments (COMMENT Command)

The COMMENT command enables you to add a comment to a library module header or to replace an existing comment. You must allow a single space between the last file parameter and the beginning of your comment text. Anything following that space is considered part of the comment by the system. Comments may be up to 30 characters long. Longer comment texts are truncated to 30 characters. The COMMENT command issues a message to you, informing you when it has completed processing.

To find out what, if any, comments have been added to a module, use the FSTATUS command with the LONG parameter (3.4.12) or use the COP librarian statement (see the *System Service Programs (SSP) Operating Guide,* UP-8841.

You may use more than one line of the workstation screen to enter this command and its associated parameters. To do this, place a dash (-) as the last character in the first line of the command. The system recognizes the dash as a continuation character and asks you (in a message) for further input. You may use as many lines of the screen as you wish; just place a dash at the end of every line except the line on which the parameter string ends.

Format

```
                         ┌                      ┐
COMMENTΔMODULE=modulename│,TYPE= ⎧module-type⎫ │,FILENAME= ⎧filename  ⎫
                         │       ⎩S          ⎭ │           ⎨'filename'⎬
                         └                      ┘           ⎩"filename"⎭

   [,RDPASS=password][,WRPASS=password],VSN=volumeΔtext
```

Command Options

`text`

Specifies the text of the comment you wish to insert, or the text you wish to insert in place of the existing comment. It may be up to 30 characters long. *A single space must separate the text from the file parameters.*

Example

```
COM MODULE=PARTIME,FILENAME=PAYFIL PART TIME WORKERS
```

In this example, the comment PART TIME WORKERS is being added to the module named PARTIME, located in the file named PAYFIL. Since no module type is specified, the module is a source module. No password is needed to access this file. Since no volume serial number is included among the file parameters, it is assumed to be included in the file catalog entry for the file containing the module to which the comment was added.

The following conditions could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were entered improperly.

- File, Module, or Volume Not Available

  The file, module, or volume you requested is not available for your access.

- Invalid Password

  The password you entered is not valid.

3.4.5. Copying Files (COPY Command)

The COPY command copies modules or files. You can also use it to alter the format of a file. You can copy one type of file to another type. For example, you can make a spooled file copy of a MIRAM file or a tape file copy of a spooled file. You can use the COPY command with these types of files: MIRAM, library module, spool, tape, and unit record files. The different parameters required for each type of file are shown in five formats explained later in this subsection.

To copy one type of file to another type, use the appropriate input and output parameter strings. For example, to copy a MIRAM file to a spool file, use the input parameter string in Format 2 (for MIRAM files) and the output parameter string in Format 3 (for spool files). (The input parameter string is everything preceding the word TO; the output parameter string is everything following it.) You must place the delimiter TO between the input and output parameter strings. The word TO must be separated from the input and output parameter strings by single spaces. The command will be rejected if the spaces are omitted.

The COPY command runs as a background task. You can enter other commands while the COPY command is executing. You will receive a message when the COPY command is finished.

You can use more than one line of the workstation screen to enter this command and its associated parameters. To do this, place a dash (-) as the last character in the first line of the command. The system recognizes the dash as a continuation character and asks you (in a message) for further input. You can use as many lines of the screen as you wish; just place a dash at the end of every line except the line on which the parameter string ends.

The COPY command is divided into the following five formats:

Format 1 (Copying SAT or MIRAM Library Modules)

```
COPYΔMODULE=modulename[,TYPE= {module-type}],FILENAME= {filename  }
                              {S          }             {'filename'}
                                                        {"filename"}

 [,RDPASS=password],VSN=volumeΔTOΔMODULE=modulename][,TYPE= {module-type}]
                                                             {S          }

 ,FILENAME= {filename  } [,RCSZ=n][,WRPASS=password],VSN=volume
            {'filename'}
            {"filename"}

 [,CONTIG= {YES}][,INC= {n}][,SIZE=n][,SAT= {YES}]Δ[NUMBER][,HEX][,WAIT]
           {NO }        {1}                 {NO }
```

Note: *There are two modules for every screen format: an F type module and an FC type module. To copy a screen format, you must copy both modules in two separate COPY operations. Remember to specify the file type by using the TYPE= parameter. The rest of the file parameters remain the same for both modules.*

Command Options

NUMBER

Specifies that each record is to be prefaced with a record number in the copy made of the file.

Note: *This option makes each record 10 characters longer.*

HEX

Specifies that the copy made of the file will have its records translated into their printable hexadecimal equivalent.

Note: *This option doubles the size of each record.*

WAIT

Specifies that control is not returned to WORKSTATION mode until the COPY command has completed execution. Normally, when you issue a COPY command, a background task will be created, and the COPY command will execute as a background job, allowing you to continue to use WORKSTATION mode for user or system programs. However, there may be times when you want to be sure the COPY operation has been completed successfully before going on with your program, such as when you are making a backup copy of a file. In this case, entering the WAIT keyword with the COPY command causes WORKSTATION mode to be stopped until the command has completed execution.

Format 2 (Copying MIRAM Data Files)

```
COPYΔFILENAME= ⎧filename  ⎫ [,RDPASS=password],VSN=volume ⎡           ⎤
               ⎨'filename'⎬                                ⎢,KEYNO= ⎧n⎫⎥
               ⎩"filename"⎭                                ⎣        ⎩0⎭⎦

 ⎡,DEVICE= ⎧did     ⎫⎤  ΔTOΔFILENAME= ⎧filename  ⎫ [,WRPASS=password],VSN=volume
 ⎢         ⎨DISK    ⎬⎥                ⎨'filename'⎬
 ⎣         ⎩DISKETTE⎭⎦                ⎩"filename"⎭

 ⎡,CONTIG= ⎧YES⎫⎤⎡,INC= ⎧n⎫⎤⎡,KEYNO= ⎧n⎫⎤⎡,KEYi= ⎧n:m                             ⎫⎤
 ⎣         ⎩NO ⎭⎦⎣      ⎩1⎭⎦⎣        ⎩0⎭⎦⎣      ⎩(n:m, ⎧DUP ⎫ , ⎧CHG ⎫)          ⎭⎦
                                                       ⎩NDUP⎭   ⎩NCHG⎭

 [,SIZE=n]⎡,INIT= ⎧YES⎫⎤⎡,EXTEND= ⎧YES⎫⎤
          ⎣       ⎩NO ⎭⎦⎣         ⎩NO ⎭⎦

 ⎡,RCB= ⎧YES⎫⎤⎡,RCFM= ⎧FIX⎫⎤[,RCSZ=n]⎡,SCSZ= ⎧n  ⎫⎤
 ⎣      ⎩NO ⎭⎦⎣       ⎩VAR⎭⎦         ⎣      ⎩256⎭⎦

 ⎡,DEVICE= ⎧did     ⎫⎤  [,BFSZ=n]Δ[NUMBER][,HEX][,WAIT]
 ⎢         ⎨DISK    ⎬⎥
 ⎣         ⎩DISKETTE⎭⎦
```

Command Options

NUMBER

Specifies that each record is to be prefaced with a record number in the copy made of the file.

Note: *This option makes each record 10 characters longer.*

HEX

Specifies that the copy made of the file will have its records translated into their printable hexadecimal equivalent.

Note: *This option doubles the size of each record.*

WAIT

Specifies that control is not returned to WORKSTATION mode until the COPY command has completed execution. Normally, when you issue a COPY command, a background task will be created, and the COPY command will execute as a background job, allowing you to continue to use WORKSTATION mode for user or system programs. However, there may be times when you want to be sure the COPY operation has been completed successfully before going on with your program, such as when you are making a backup copy of a file. In this case, entering the WAIT keyword with the COPY command causes WORKSTATION mode to be stopped until the command has completed execution.

Format 3 (Copying Spool Files)

```
COPYΔ[JOB=jobname] [,HOLD= { L } ] [,FILENAME= { filename   } ]
                           { N }               { 'filename' }
                           { Y }               { "filename" }

   [,ACCT=acct],QUEUE= { LOG   } [,ALL= { YES } ] [,SKIP= { n } ]
                       { PRINT }        { NO  }           { 0 }
                       { PUNCH }
                       { RDR   }

    ΔTOΔ[JOB=jobname] [,HOLD= { N } ] [,FILENAME= { filename   } ]
                              { Y }               { 'filename' }
                                                  { "filename" }

  ,QUEUE= { PRINT } Δ[NUMBER][,HEX][,WAIT]
          { PUNCH }
          { RDR   }
```

Command Options

NUMBER

Specifies that each record is to be prefaced with a record number in the copy made of the file.

Note: *This option makes each record 10 characters longer.*

HEX

Specifies that the copy made of the file will have its records translated into their printable hexadecimal equivalent.

Note: *This option doubles the size of each record.*

WAIT

Specifies that control is not returned to WORKSTATION mode until the COPY command has completed execution. Normally, when you issue a COPY command, a background task will be created, and the COPY command will execute as a background job, allowing you to continue to use WORKSTATION mode for user or system programs. However, there may be times when you want to be sure the COPY operation has been completed successfully before going on with your program, such as when you are making a backup copy of a file. In this case, entering the WAIT keyword with the COPY command causes WORKSTATION mode to be stopped until the command has completed execution.

Format 4 (Copying Tape Files)

```
COPYΔ [ FILENAME= { filename   } ] [,RDPASS=password],VSN=volume,DEVICE= { did  }
      [           { 'filename' } ]                                        { TAPE }
      [           { "filename" } ]

[,BKNO= { YES } ]ΔTOΔ [ FILENAME= { filename   } ]
[       { NO  } ]     [           { 'filename' } ]
                                  { "filename" }
 [,WRPASS=password],VSN=volume,DEVICE= { did  }
                                       { TAPE }

[,INIT= { YES } ][,EXTEND= { YES } ][,BFSZ=n]
[       { NO  } ][         { NO  } ]

[,BKNO= { YES } ][,RCFM= { FIXUNB } ][,RCSZ=n]Δ[NUMBER][,HEX][,WAIT]
[       { NO  } ][       { FIXBLK } ]
                 [       { VARUNB } ]
                 [       { VARBLK } ]
                 [       { UNDEF  } ]
```

Command Options

NUMBER

Specifies that each record is to be prefaced with a record number in the copy made of the file.

Note: *This option makes each record 10 characters longer.*

HEX

Specifies that the copy made of the file will have its records translated into their printable hexadecimal equivalent.

Note: *This option doubles the size of each record.*

WAIT

Specifies that control is not returned to WORKSTATION mode until the COPY command has completed execution. Normally, when you issue a COPY command, a background task will be created, and the COPY command will execute as a background job, allowing you to continue to use WORKSTATION mode for user or system programs. However, there may be times when you want to be sure the COPY operation has been completed successfully before going on with your program, such as when you are making a backup copy of a file. In this case, entering the WAIT keyword with the COPY command causes WORKSTATION mode to be stopped until the command has completed execution.

Format 5 (Copying Unit Record Files)

```
COPYΔDEVICE= ⎧did     ⎫ ,FILENAME= ⎧filename  ⎫ ,VSN=volume
             ⎨DISKETTE⎬            ⎨'filename'⎬
             ⎩RDR     ⎭            ⎩"filename"⎭

   ΔTOΔDEVICE= ⎧did     ⎫  ,RCFM= ⎧FIX⎫ [,RCSZ=n]
               ⎪DISKETTE⎪         ⎩VAR⎭
               ⎪PRINT   ⎪
               ⎩PUNCH   ⎭
   ,FILENAME= ⎧filename  ⎫ ,VSN=volumeΔ[NUMBER][,HEX][,WAIT]
              ⎨'filename'⎬
              ⎩"filename"⎭
```

Note: *The FILENAME= and VSN= parameters are required only when using a diskette.*

Command Options

NUMBER

Specifies that each record is to be prefaced with a record number in the copy made of the file.

Note: *This option makes each record 10 characters longer.*

HEX

Specifies that the copy made of the file will have its records translated into their printable hexadecimal equivalent.

Note: *This option doubles the size of each record.*

WAIT

Specifies that control is not returned to WORKSTATION mode until the COPY command has completed execution. Normally, when you issue a COPY command, a background task will be created, and the COPY command will execute as a background job, allowing you to continue to use WORKSTATION mode for user or system programs. However, there may be times when you want to be sure the COPY operation has been completed successfully before going on with your program, such as when you are making a backup copy of a file. In this case, entering the WAIT keyword with the COPY command causes WORKSTATION mode to be stopped until the command has completed execution.

Example

```
COP MODULE=SYSDUMP,FILENAME=$Y$JCS TO FILENAME=JCL,QUEUE=RDR,HOLD=N
```

In this example, the module named SYSDUMP, located in the file named $Y$JCS, is to be copied to a spool file name JCL, located on the RDR (reader) spool queue. The file is *not* specified to be retained after processing.

The following conditions could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were improperly entered.

- File, Module, or Volume Not Available

  The file, module, or volume you wish to copy is unavailable for your use.

- Invalid Password

  The password or passwords you entered are not valid.

3.4.6. Assigning Commands to Function Keys (DEFKEY Command)

The DEFKEY command allows you to assign any interactive command to a function key or to the MESSAGE WAITING key. (See Appendix A for the location of the 22 function keys and the MESSAGE WAITING key on your keyboard.) Once you've assigned a key, you simply have to press it to execute the command associated with it. Your workstation can be in data or system mode when the function key is pressed.

You can include function key assignments in your execution profile. You should note, however, that when you assign a function key, it is only valid during your workstation session and only for your user-id. Another user with a different ID does not get the same results by pressing the function key you've assigned a command to. To assign function keys for other users, you can include the function key assignments in their execution profiles.

To free a function key from a command string, see the DEFKEY (delete) command (3.4.7). To simply assign a new command string to an already assigned function key, enter the DEFKEY command with the new command string. This overrides the previous assignment for that key.

Notes:

1. *You must take care not to redefine keys used by interactive services or any of the interactive facilities. If you do reassign them, you will lose the functions they provide. These function keys are listed in Appendix E.*

   For Screen Format Services Users: Be aware that screen format services (SFS) also allows you to assign function keys that are used by a program. If you assign a function key already used by your SFS program, the DEFKEY assignment takes precedence and you lose the SFS function key capability.

2. *The DEFKEY command can be used at the system console. To use a function provided by a function key from a console that has no function keys, enter* `F#n` *or* `#n` *where* `n` *is the function key number.*

Format

```
DEFKEYΔ ⎧F#nn⎫ , ⎧'command string'⎫
        ⎩MW  ⎭   ⎩"command string"⎭
```

where:

`nn`

Is the 1- or 2-digit number of the function key you're assigning a command to.

`MW`

Stands for the MESSAGE WAITING key.

```
{'command string'}
{"command string"}
```

Is the actual interactive command string. It must be enclosed in either single or double quotes and can be up to 60 characters long.

Note: *The DEFKEY command does not check the syntax of your command string. If you make an error in the command string, it won't show up until you actually use the function key associated with it. At that time, you will get an error message that an illegal command has been entered.*

Examples

```
DEFKEY F#2,'BR LO'
```

In this example, the breakpoint log command is assigned to function key 2. When you press this key, the workstation log is closed and is made available to the output writer for printing.

```
DEFKEY MW,"LOGOFF"
```

In this example, the LOGOFF command is assigned to the MESSAGE WAITING key. When you press this key, the LOGOFF command automatically executes.

The following condition could cause this command to be rejected:

Incorrect Syntax

The command was misspelled or ambiguous, or the command or parameters were entered improperly.

3.4.7. Deleting Function Key Assignments (DEFKEY Delete Command)

To free a function key or the MESSAGE WAITING key from a command assignment, you use the delete form of the DEFKEY command. The delete DEFKEY command is exactly like the DEFKEY command, minus the command string. Once you delete a command assignment from a function key you can reassign a new command to it. (To view a list of the function keys assigned under your user-id, use the DEFKEY DISPLAY command 3.4.8.)

The format of the delete DEFKEY command is:

```
DEFKEYΔ {F#nn}
        {MW  }
```

where:

nn
: Is the number of the function key (from 1 to 22) that you previously assigned a command to.

MW
: Is the MESSAGE WAITING key.

Examples

```
DEFKEY F#5
```

In this example, function key 5 is no longer associated with the command string previously assigned to it.

```
DEFKEY MW
```

In this example, the MESSAGE WAITING key is freed from the command previously assigned to it.

The following condition could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were entered incorrectly.

3.4.8. Displaying Function Key Assignments (DEFKEY DISPLAY Command)

The DEFKEY DISPLAY command displays all the function keys and commands assigned under your user-id during a workstation session. (See the DEFKEY command, 3.4.6.) If function key assignments were made a part of your execution profile, this is a very useful means of finding out what commands the function keys will execute.

Format

```
DEFKEYΔDISPLAY
```

The format of the function key display that appears on your workstation screen is:

```
F#nn=command string
```

where:

`nn`
Is the function key number (from 1 to 22).

`command string`
Is the actual interactive command assigned to that key.

A sample function key display is shown below:

```
DEFKEY DISPLAY
11 DEFKE004 F#06=BR LO
12 DEFKE004 F#07=EDT
13 DEFKE004 F#08=LOGOFF
14 DEFKE004 F#09=STATUS
```

The following condition could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were entered improperly.

3.4.9. Using the Interactive Commands in a Batch Environment (ENTER Command)

The ENTER command allows you to run an interactive workstation session as a batch task. You may build a sequence of workstation commands, from LOGON to LOGOFF, and store it as a library module, on the spool file, on a diskette, a tape or a deck of punched cards. You can then run the stream of workstation commands as a batch job. You may not use any of the following workstation commands: CONNECT, SCREEN, FREE, BRKPT, DELETE, DISPLAY and FILE. You may not use these commands because jobs performed by using the ENTER command do not direct any output to a workstation. All output is directed to a printer. Unlike a job control stream, a stream of workstation commands are processed one at a time, sequentially. If an error is discovered in a command, processing continues with the next command. If your ENTER stream includes a job control stream for entering a spooled input file, be sure the FILEID field of the //DATA card is the same as the FILENAME= parameter of the ENTER command used to run the ENTER stream.

You may use more than one line of the workstation screen to enter this command and its associated parameters. To do this, place a dash (-) as the last character in the first line of the command. The system recognizes the dash as a continuation character and asks you (in a message) for further input. You may use as many lines of the screen as you wish; just place a dash at the end of every line except the line on which the parameter string ends.

The ENTER stream runs under the user-id of the workstation from which it was issued. If the ENTER stream is issued from the system console, it will run under the user-id specified in the LOGON command in the ENTER stream.

Note: *If you use the SC command (running already expanded job control streams) in a stream of workstation commands, you must enter SCH instead of SC. SC will not be accepted by the ENTER command. This is to avoid confusing the SC and SCREEN commands.*

Format

To Run a Command Stream from a Library File:

```
ENTERΔMODULE=modulename ┌,TYPE= ⎧module-type⎫┐,FILENAME= ⎧filename  ⎫
                        │       ⎩S          ⎭│           ⎨'filename'⎬
                        └                    ┘           ⎩"filename"⎭

  [,RDPASS=password],VSN=volume
```

To Run a Command Stream from a Spooled File:

```
ENTERΔ┌HOLD= ⎧N⎫┐ ┌ ,FILENAME= ⎧filename  ⎫┐,QUEUE=RDR
      │      ⎩Y⎭│ │            ⎨'filename'⎬│
      └         ┘ │            ⎩"filename"⎭│
                  └                        ┘
```

To Run a Command Stream from a DSL Diskette:

```
ENTERΔ┌ FILENAME= ⎧filename  ⎫┐[,RDPASS=password],VSN=volume
      │           ⎨'filename'⎬│
      │           ⎩"filename"⎭│
      └                       ┘
  ┌,DEVICE= ⎧did     ⎫┐
  │         ⎩DISKETTE⎭│
  └                   ┘
```

To Run a Command Stream from a Tape:

```
ENTERΔ┌FILENAME= ⎧filename  ⎫┐[,RDPASS=password],VSN=volume┌,DEVICE= ⎧did ⎫┐
      │          ⎨'filename'⎬│                            │         ⎩TAPE⎭│
      │          ⎩"filename"⎭│                            └               ┘
      └                      ┘
```

To Run a Command Stream from a Card Reader;

```
ENTERΔDEVICE= { did }
              { RDR }
```

Example

```
ENT MODULE=INJOB,TYPE=S,FILENAME=JOBFILE,RDPASS=SEEK,VSN=REL082
```

In this example, a stream of workstation commands is to be read from a library module and executed. The module name is INJOB, and it is a source module. It is located in the library file named JOBFILE. To access JOBFILE, a password, SEEK, is entered. JOBFILE is located on a disk volume with the volume serial number REL082. The following is a typical stream of workstation commands. Note that it invokes the general editor and performs four editing commands.

```
LOGON JOB6,A263
EDT
@READ MYFILE,DISK02
@CHANGE 'OPWN' TO 'OPEN'
@WRITE
@HALT
PRINT MYFILE,DISK02 NUMBER
LOGOFF
```

The following conditions could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were improperly entered.

- First Command Not LOGON

  The first command of any stream using the ENTER command *must* be the LOGON command. If you do not have a LOGON command as the first card of your enter stream, the system will reject your ENTER command.

- Data Cards Interpreted as System Commands

  This could happen if, for example, you have a LOGON card, an EDT card, and then a series of EDT commands. If the EDT card is not read for some reason, the system will attempt to interpret the EDT commands as system commands and reject each one it reads and misinterprets.

- Cards in the Stream after the LOGOFF Command

  Cards in the stream after a LOGOFF command are not read. The system stops reading immediately upon reading the LOGOFF command.

3.4.10. Deleting Library Files and Modules and MIRAM Files (ERASE Command)

The ERASE command permits you to delete library and data files, and library file modules. The ERASE command deletes library modules by marking them as deleted. The ERASE command deletes files by removing them from the volume table of contents (VTOC) for the volume on which they reside. When you enter the command to erase a whole file, the system returns the following message to you before executing the command:

```
25?ERASE002 IS51 ERASING ENTIRE FILE, PROCEED? (Y,N)
```

This helps prevent unintentional deletion of important files. You must enter Y before the system can go ahead and delete the file. The ERASE command issues a message to you when it has completed execution.

Since the ERASE command only deletes files or modules *logically* by removing them from the volume table of contents (VTOC), they still physically exist. In the event you accidentally erase a source, procedure, or macro module in a SAT library, use the RECOVER command (3.4.18) to recover the module. The RECOVER command is effective up to the time a LIBS PAC operation is performed. Once a LIBS PAC is completed, the file or module is permanently lost, logically and physically. MIRAM files cannot be recovered.

You may use more than one line of the workstation screen to enter this command and its associated parameters. To do this, place a dash (-) as the last character in the first line of the command. The system recognizes the dash as a continuation character and asks you (in a message) for further input. You may use as many lines of the screen as you wish; just place a dash at the end of every line except the line on which the parameter string ends.

Format

To Erase a Single Library Module:

```
                        ┌                          ┐            ┌            ┐
ERASEΔMODULE=modulename │ ,TYPE= ┌ module-type ┐   │ ,FILENAME= │ filename   │
                        │        └ S           ┘   │            │ 'filename' │
                        └                          ┘            │ "filename" │
                                                                └            ┘
    [,WRPASS=password],VSN=volume
```

To Erase Library and MIRAM Files:

```
ERASEΔFILENAME= ⎧filename  ⎫ [,WRPASS=password],VSN=volume
                ⎨'filename'⎬
                ⎩"filename"⎭
```

Note: *To erase a spool file, you must use the DELETE SPL command, found in 3.3.9.*

Example

```
ER MODULE=PAYMOD,FILENAME=$Y$JCS,VSN=RES
```

In this example, the module named PAYMOD, which is part of the file $Y$JCS, is to be erased. The file $Y$JCS resides on the volume with the volume serial number RES and is a source module.

The following conditions could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were improperly entered.

- File or Module Not Found

  The system is unable to locate the file or module you requested.

- Volume Not Available

  The volume containing the file you requested is not available.

- Invalid Password

  The password you entered is invalid.

3.4.11. Discarding System Messages (FLUSH Command)

The FLUSH command allows you to discard system messages queued for delivery at your workstation. You can discard all queued messages or only those with a specified message prefix.

Format

```
FLUSH ⎧*ALL      ⎫
      ⎩msg-prefix⎭
```

where:

`*ALL`
Specifies that all queued messages will be discarded

`msg-prefix`
Specifies that the messages with this prefix will be discarded

3.4.12. Obtaining File Status Information (FSTATUS Command)

You use the FSTATUS command to obtain information about files and their contents. You may obtain information about the modules contained in a library file. When you reference a library file using this command, you may select either a short or long display of module information. The short display gives a list of active modules and what type of module each is. The long display lists each module with its name, type, comment (if one is present), and the date and time the module was created. If you do not want to see the entire output of your library file, press function key 1 or 18. This terminates the output processing and displays an ED087 message.

Note: *Only one FSTATUS command may be processed at a time. You may not enter another FSTATUS until the command currently being processed is completed.*

You may use more than one line of the workstation screen to enter this command and its associated parameters. To do this, place a dash (-) as the last character in the first line of the command. The system recognizes the dash as a continuation character and asks you (in a message) for further input. You may use as many lines of the screen as you wish; just place a dash at the end of every line except the line on which the parameter string ends.

Format

For Library Files:

```
FSTATUSΔ[MODULE=modulename] ⎡,TYPE= ⎧module-type⎫⎤,FILENAME= ⎧ filename  ⎫
                            ⎢       ⎩S          ⎭⎥           ⎨ 'filename'⎬
                            ⎣                    ⎦           ⎩ "filename"⎭
   [,RDPASS=password],VSN=volumeΔ[LONG]
```

Command Options

Note: *With the FSTATUS command you can use the module name and module type as qualifiers to produce displays of groups of modules.*

To use the module name parameter as a qualifier, enter the characters you wish to use to qualify the modules to be displayed, and enter a period (.) as the last character of the module name parameter. The command will then produce a display of all modules whose names begin with the characters you specified. For example, entering ABC. will cause all modules whose names begin with the letters ABC to be displayed. Entering the letters ABC without a period, however, will cause the display of only those modules named ABC.

To use the module type parameter as a qualifier, enter the character or characters you wish to use to qualify the modules to be displayed, and enter a period (.) as the last character of the module type parameter. The command will then produce a display of all modules whose type begins with the character or characters you specified. For example, if you enter F. as the module type, you will receive a display of all modules of type F, or whose type begins with an F. Entering only F with no period will cause only type F modules to be displayed.

`LONG`

Specifies that you wish to see the long version of the FSTATUS display for library files. If you do not enter LONG, the short version will be displayed by default.

Example

If you wanted a short display of the modules contained in the library file $Y$JCS, residing on volume REL082, you would enter:

```
FS FILENAME=$Y$JCS,VSN=REL082
```

You would then see the following display:

```
FSTATUS    $Y$JCS,REL082

P-J$CPYLBO   P-J$COBOL   P-J$FORT    P-J$FOR

P-J$LINK     P-UTSLIN    S-SYSDUMP   S-COR#V

P-CORRUN     S-SU$PAT
```

Entering the LONG parameter produces the following display:

```
FSTATUS J, $Y$JCS,PACK75    LONG

P-J$CPYLBO  EMUL AID 8410   DISC COPY 11/28/79  09:27

P-J$COBOL   COBOL CANNED   JPROC      11/28/79  09:28

P-J$FORT    FORTRAN CANNED JPROC      11/28/79  09:28
```

The following conditions could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were improperly entered.

- File or Volume Not Available

  The file or volume you wish to access is not available.

- Invalid Password

  The password you entered to read the file is not valid. You are denied access to the file.

- Attempt to Reference a Spool File

  The FSTATUS command cannot be used to obtain information about a spool file. Only library files may be referenced.

3.4.13. Obtaining Command and Message Assistance (HELP Command)

You use the HELP command to obtain information on how to use other workstation commands and how to handle error messages sent to you by the system. When you enter HELP for a command, you receive a screen display explaining the command and its use. When you enter HELP for a message, you receive a screen display explaining the message and how to respond to it.

Format

```
HELPΔ ⎧command          ⎫
      ⎨message-no       ⎬
      ⎩keyword-parameter⎭
```

Parameters

command

Specifies the command you need help with. You must enter the command in its entirety; you may not abbreviate it.

message-no

Specifies the message you need help with. You identify the message using the 4-character id that is part of the message text. For example, all interactive services messages are preceded with an 8-character id. This id consists of up to a 5-character prefix plus the 3-character id. When the command is less than 5 characters in length, it is padded with blanks. Consider the various parts of this sample message:

```
                                   message text
                  ___________________________^___________________________
XXXXXXXX IS78 EXECUTE COMMAND STILL ACTIVE, WAIT FOR IT TO FINISH
‾‾‾‾v‾‾‾ ‾v‾‾
message  message number
prefix   (use with HELP command)
```

All message numbers appear in the message manual.

Note: *System error codes contain only numbers. To get help for a system error code, enter HELP ECerror-code, where error-code must be three digits long, with a leading zero if necessary. Thus, to get help for error code 051, you enter HELP EC051.*

keyword-parameter

Specifies a keyword parameter used in a command. If you need help with a keyword parameter, you must enter the keyword, for example, HELP FILENAME, HELP MODULE, or HELP VSN. You must enter the parameter in its entirety; you may not abbreviate it.

Note: *You can receive help for many commands, messages, and keyword parameters; if, however, you enter a command, message, or keyword parameter for which help is not yet available, you receive the following message:*

```
IS94 THE HELP YOU REQUESTED IS NOT AVAILABLE, SORRY.
```

Examples

Help for a message:

```
HELP IS34

32 HELP007 IS34 ILLEGAL COMMAND HAS BEEN ENTERED, IGNORED
33 HELP007 A COMMAND HAS BEEN ENTERED THAT THE SYSTEM DOES NOT
34 HELP007 RECOGNIZE.  THE COMMAND ENTERED MAY NOT BE ONE OF THE OS/3
35 HELP007 INTERACTIVE COMMANDS, OR IT MAY BE A VALID COMMAND SPELLED
36 HELP007 INCORRECTLY.  THIS COMMAND ALSO APPEARS IF A BRKT, DELETE,
37 HELP007 DISPLAY, FILE, IN, PD, SU, OR TU COMMAND IS ISSUED AS PART
38 HELP007 OF AN ENTER STREAM.
39 HELP007
40 HELP007 CHECK COMMAND VALIDITY AND SPELLING; CORRECT THE COMMAND AND
41 HELP007 REENTER.
42 HELP007 IS90 HELP      COMMAND TERMINATED NORMALLY
```

The top of the screen shows the HELP command entered for message IS34. The next 10 lines of the screen are the HELP display, explaining the message and giving you a list of permitted commands. The final line of the display shows that the HELP command has completed. Note that the command is entered in lowercase letters; as with all commands, you may enter it in either uppercase or lowercase.

Help for a command:

```
HELP ALLOCATE
43 HELP007 YOU USE THE ALLOCATE COMMAND TO ALOCATE FILES WITHOUT
44 HELP007 USING JOB CONTROL STATEMENTS. IT INTERACTIVELY RESERVES
45 HELP007 SPACE FOR A FILE ON A DISK OR DISKETTE OF YOU CHOOSING
46 HELP007 AND IDENTIFIES IT TO THE SYSTEM. THE COMMAND FORMAT IS:
47 HELP007
48 HELP007 ALLOCATE <FILE-TYE>,FILENAME=,VSN=,SIZE,[,RDPASS=]
49 HELP007    [,WRPASS=][,CONTIG=][,INC=]
50 HELP007
51 HELP007 FOR AN EXPLANATION OF EACH KEYWORD PARAMETER SEE ITS HELP
52 HELP007 SCREEN. THE SINGLE COMMAND OPTION AVAILABLE WITH ALLOCATE
53 HELP007 IS FILE-TYPE. VALID FILE TYPES VARY WITH THE HARDWARE
54 HELP007 YOU'RE USING, AS FOLLOWS:
55 HELP007 COMMAND OPTION   FILE TYPE   SERIES 90   SYSTEM 80
56 HELP007    ST              SAT          X           X
57 HELP007    MI              MIRAM        X           X
58 HELP007    IR              IRAM         X
59 HELP007    IS              ISAM         X
60 HELP007    DA              DAM          X
61 HELP007    SQ              SEQUENTIAL   X
62 HELP007    NI              NONINDEXED   X
63 HELP007 (X = CAN ALLOCATE THIS TYPE OF FILE WITH THIS HARDWARE.)
64 HELP007 IS90 HELP     COMMAND TERMINATED NORMALLY
```

The first line of the screen display shows the HELP command entered for the ALLOCATE command. The next 21 lines are the HELP display, explaining the function of the command, its format, and the parameters entered with it. The final line of the display shows that the HELP command has completed.

Help for a keyword parameter:

```
HELP SIZE
81 HELP006 SIZE=<N>
82 HELP006 SPECIFIES THE SIZE OF THE FILE TO BE ALLOCATED. THE VALUE
83 HELP006 OF N SPECIFIES THE NUMBER OF CYLINDERS FOR DISK FILES AND
84 HELP006 THE NUMBER OF BLOCKS FOR DISKETTE FILES. THIS PARAMETER IS
85 HELP006 SPECIFIED ONLY WHEN CREATING A NEW FILE.
86 HELP006 IS90 HELP          COMMAND TERMINATED NORMALLY
```

The top of the screen shows the help command entered for the size parameter. The next 5 lines are the HELP display, explaining the keyword parameter and showing its format. The final line of the display shows that the HELP command has completed.

The following conditions could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were improperly entered.

- Invalid Parameters

  You entered the command with no parameters, or with something other than a command or message prefix. You may only enter either a message prefix or a command with the HELP command.

3.4.14. Calling Menus (MENU Command)

Menus are an OS/3 feature designed to simplify certain everyday operator tasks. A menu is a list of items from which a workstation operator chooses. Usually these represent workstation commands, programs, or functions within programs. Menu items are numbered so that when the system displays a menu on your workstation, you select an item by entering its item number in the blanks provided on the menu screen and pressing the transmit key. There are two types of menus: those supplied by Unisys, called system menus, and those you create, called user-created menus. You create menus using menu services; Section 4 briefly outlines how menu services work.

Format

```
      ┌           ┌                             ┐┐
MENU△ │[menu-name]│,⎧filename,vsn               ⎫││
      │           │ ⎨SYSFMT  ┌         ┐        ⎬││
      │           │ ⎪        │,⎧RES⎫   │        ⎪││
      │           │ ⎩        │ ⎩vsn⎭   │        ⎭││
      └           └          └         ┘        ┘┘
```

Parameters

menu-name
: Is the name of a user-created menu you want to call. If you don't specify a menu name, menu services automatically call a standard system menu (included with your system) that is designed to acquaint new users with OS/3. For more information on system-supplied menus, see 1.4.

`file-name`

Is the name of the MIRAM file in which your menu resides. The default is the system format file, $Y$FMT.

`vsn`

Is the volume serial number of the volume containing your menu file. The default value, the system resident volume, RES, applies only if the filename parameter is $Y$FMT. For any other filename, you must specify this parameter even if it is RES.

Examples

```
MENU
```

In this example, the MENU command with no menu-name specified calls up the first of the menus supplied by Unisys. This menu resides in $Y$FMT on SYSRES. It looks like this:

```
                         SYSTEM MENU   OS301

        1. RUN A JOB                          3. END MENU
        2. PERFORM A SYSTEM FUNCTION          4. LOGOFF

  FOR HELP ON A PARTICULAR ITEM NUMBER, ENTER A QUESTION MARK
  FOLLOWED BY THE ITEM NUMBER (?N). HELP FOR THE ENTIRE DISPLAY
  CAN BE ACQUIRED BY ENTERING A QUESTION MARK (?) THEN PRESSING
  TRANSMIT.

                         ENTER SELECTION: 2
```

You simply select a function, enter the number associated with that function in the space provided, and transmit the screen. Menu services then display other menus giving you further choices of system facilities. As the menu screen describes, you can also get help with any part of the menu.

```
MENU PAYROLL
```

In this example, the MENU command calls up the PAYROLL menu from $Y$FMT on SYSRES, which lists various payroll functions:

```
1.  *********************************PAYROLL MENU************************************
2.  1. PAYROLL DATA ENTRY                  7.  RESTORE PAYROLL FILES
3.  2. PAYROLL INQUIRY                     8.  EXIT FROM THIS MENU
4.  3. PAYROLL EDIT                        9.
5.  4. PAYROLL CHECKS                     10.
6.  5. PAYROLL ANALYSIS REPORTS           11.
7.  6. BACKUP PAYROLL FILES               12.

8.                                       ENTER SELECTION NUMBER: ___
```

You simply select a function, enter the number associated with that function on line 8, and transmit the screen. If you need help with any function, enter a "?" before the function number. Or, to get help with the entire screen, simply enter a question mark. Menu services then display a help screen associated with that function or menu.

The following condition could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were improperly entered.

3.4.15. Making Printed Copies of Files (PRINT Command)

The PRINT command is used to make a printed copy of a SAT or MIRAM library module, a MIRAM data file, a spool file, tape file, or unit record file. You may direct the output of this command to either an actual printer or a spool printer. The printed copy produced by this command includes a header page containing identification information.

The PRINT command executes as a background job; that is, it is executed in such a way as to permit you to continue entering commands while it is executing. The PRINT command issues you a message when it has completed execution.

You may use more than one line of the workstation screen to enter this command and its associated parameters. To do this, place a dash (-) as the last character in the first line of the command. The system recognizes the dash as a continuation character and asks you (in a message) for further input. You may use as many lines of the screen as you wish; just place a dash at the end of every line except the line on which the parameter string ends.

The PRINT command is divided into the following five formats:

Format 1 (Printing SAT and MIRAM Library Modules)

```
PRINTΔMODULE=modulename ⎡,TYPE= ⎧module-type⎫⎤ ,FILENAME= ⎧filename  ⎫
                        ⎢       ⎩S          ⎭⎥            ⎨'filename'⎬
                        ⎣                    ⎦            ⎩"filename"⎭

  [,RDPASS=password],VSN=volume ⎡,COPIES= ⎧n⎫⎤Δ[DIRECT][,NUMBER][,HEX][,WAIT]
                                ⎢         ⎩1⎭⎥
                                ⎣            ⎦
```

Command Options

DIRECT

Specifies that an actual printer be assigned to print the file requested in the command. When DIRECT is not specified, the file requested will be copied to a spool file and printed when a printer becomes available. When DIRECT is specified, the file is not spooled and is printed immediately if a printer is available. If DIRECT is specified and no printer is available, you will receive an error message at the workstation. The default condition is that the file be spooled.

NUMBER

Specifies that line numbers are to be included with the printout.

HEX

Specifies that the file be translated into its printable hexadecimal equivalent before being printed.

WAIT

Specifies that control is not returned to WORKSTATION mode until the PRINT command has completed execution. Normally, when you issue a PRINT command, a background task is created, and the PRINT command executes as a background job, allowing you to continue to use WORKSTATION mode for user or system programs. However, there may be times when you want to be sure the PRINT operation has been completed successfully before going on with your program. In this case, entering the WAIT keyword with the PRINT command causes WORKSTATION mode to be stopped until the command has completed execution.

Format 2 (Printing MIRAM Data Files)

```
PRINTΔFILENAME= {filename  } [,RDPASS=password],VSN=volume [,KEYNO= {n}]
                {'filename'}                               [        {0}]
                {"filename"}                               [           ]

 [,COPIES= {n}] [,DEVICE= {did     }] Δ[DIRECT][,NUMBER][,HEX][,WAIT]
 [         {1}] [         {DISKETTE}]
                [         {DISK    }]
```

Command Options

DIRECT

Specifies that an actual printer be assigned to print the file requested in the command. When DIRECT is not specified, the file requested will be copied to a spool file and printed when a printer becomes available. When DIRECT is specified, the file is not spooled and is printed immediately if a printer is available. If DIRECT is specified and no printer is available, you will receive an error message at the workstation. The default value is that the file be spooled.

NUMBER

Specifies that line numbers are to be included with the printout.

HEX

Specifies that the file be translated into its printable hexadecimal equivalent before being printed.

WAIT

Specifies that control is not returned to WORKSTATION mode until the PRINT command has completed execution. Normally, when you issue a PRINT command, a background task is created, and the PRINT command executes as a background job, allowing you to continue to use WORKSTATION mode for user or system programs. However, there may be times when you want to be sure the PRINT operation has been completed successfully before going on with your program. In this case, entering the WAIT keyword with the PRINT command causes WORKSTATION mode to be stopped until the command has completed execution.

Format 3 (Printing a Spool File)

```
PRINTΔ[JOB=jobname] ⎡,HOLD=⎧L⎫⎤ ⎡,FILENAME=⎧filename  ⎫⎤ [,ACCT=acct]
                    ⎢      ⎨N⎬⎥ ⎢          ⎨'filename'⎬⎥
                    ⎣      ⎩Y⎭⎦ ⎣          ⎩"filename"⎭⎦

 ,QUEUE=⎧LOG  ⎫ ⎡,ALL=⎧YES⎫⎤ ⎡,COPIES=⎧n⎫⎤ ⎡,SKIP=⎧n⎫⎤Δ[DIRECT][,NUMBER]
        ⎪PRINT⎪ ⎣     ⎩NO ⎭⎦ ⎣        ⎩1⎭⎦ ⎣      ⎩0⎭⎦
        ⎨PUNCH⎬
        ⎩RDR  ⎭

 [,HEX][,WAIT]
```

Command Options

DIRECT

Specifies that an actual printer be assigned to print the file requested in the command. When DIRECT is not specified, the file requested will be copied to a spool file and printed when a printer becomes available. When DIRECT is specified, the file is not spooled and is printed immediately if a printer is available. If DIRECT is specified and no printer is available, you will receive an error message at the workstation. The default condition is that the file be spooled.

NUMBER

Specifies that line numbers are to be included with the printout.

HEX

Specifies that the file be translated into its printable hexadecimal equivalent before being printed.

WAIT

Specifies that control is not returned to WORKSTATION mode until the PRINT command has completed execution. Normally, when you issue a PRINT command, a background task is created, and the PRINT command executes as a background job, allowing you to continue to use WORKSTATION mode for user or system programs. However, there may be times when you want to be sure the PRINT operation has been completed successfully before going on with your program. In this case, entering the WAIT keyword with the PRINT command causes WORKSTATION mode to be stopped until the command has completed execution.

Format 4 (Printing a Tape File)

```
       ┌                        ┐
PRINTΔ │FILENAME= ⎧filename  ⎫  │[,RDPASS=password],VSN=volume,DEVICE= ⎧did ⎫
       │          ⎨'filename'⎬  │                                      ⎩TAPE⎭
       │          ⎩"filename"⎭  │
       └                        ┘

 ┌               ┐
 │,BKNO= ⎧YES⎫   │Δ[DIRECT][,NUMBER][,HEX][,WAIT]
 │       ⎩NO ⎭   │
 └               ┘
```

Command Options

DIRECT

Specifies that an actual printer be assigned to print the file requested in the command. When DIRECT is not specified, the file requested will be copied to a spool file and printed when a printer becomes available. When DIRECT is specified, the file is not spooled and is printed immediately if a printer is available. If DIRECT is specified and no printer is available, you will receive an error message at the workstation. The default condition is that the file be spooled.

NUMBER

Specifies that line numbers are to be included with the printout.

HEX

Specifies that the file be translated into its printable hexadecimal equivalent before being printed.

WAIT

Specifies that control is not returned to WORKSTATION mode until the PRINT command has completed execution. Normally, when you issue a PRINT command, a background task is created, and the PRINT command executes as a background job, allowing you to continue to use WORKSTATION mode for user or system programs. However, there may be times when you want to be sure the PRINT operation has been completed successsfully before going on with your program. In this case, entering the WAIT keyword with the PRINT command causes WORKSTATION mode to be stopped until the command has completed execution.

Format 5 (Printing a Unit Record File)

```
PRINT DEVICE= ⎧did      ⎫ ,FILENAME= ⎧filename  ⎫ ,VSN=volume
              ⎨DISKETTE ⎬            ⎨'filename'⎬
              ⎩RDR      ⎭            ⎩"filename"⎭

  Δ[DIRECT][,NUMBER][,HEX][,WAIT]
```

Note: *The FILENAME= and VSN= parameters are required only when using a diskette.*

Command Options

`DIRECT`

Specifies that an actual printer be assigned to print the file requested in the command. When DIRECT is not specified, the file requested will be copied to a spool file and printed when a printer becomes available. When DIRECT is specified, the file is not spooled and is printed immediately if a printer is available. If DIRECT is specified and no printer is available, you will receive an error message at the workstation. The default condition is that the file be spooled.

`NUMBER`

Specifies that line numbers are to be included with the printout.

`HEX`

Specifies that the file be translated into its printable hexadecimal equivalent before being printed.

`WAIT`

Specifies that control is not returned to WORKSTATION mode until the PRINT command has completed execution. Normally, when you issue a PRINT command, a background task is created, and the PRINT command executes as a background job, allowing you to continue to use WORKSTATION mode for user or system programs. However, there may be times when you want to be sure the PRINT operation has been completed successfully before going on with your program. In this case, entering the WAIT keyword with the PRINT command causes WORKSTATION mode to be stopped until the command has completed execution.

Examples

```
PRI MODULE=PIB,FILENAME=$Y$SRC NUMBER
```

In this example, the source module PIB, located in the file named $Y$SRC, is printed. The NUMBER command option is included, so the printed output will have line numbers added to it.

```
PRI FILENAME=LONGMIRAMFILE,VSN=PACK23
```

In this example, a file named LONGMIRAMFILE, located on volume PACK23, is printed.

The following conditions could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were improperly entered.

- File or Volume Not Available

  The file or volume you requested is not available for your use.

- Spooling Not Configured

  The spooling process was not configured at the time your system was generated; therefore, no spool files exist to be accessed.

- Printer Not Available

  If you entered the DIRECT option with this command and no actual printer was available to print the file you requested, the system will give you an error message and tell you to enter the command again.

- Invalid Password

  The password you entered is invalid.

3.4.16. Making Punched Card Copies of a File (PUNCH Command)

The PUNCH command enables you to make punched card copies of library modules, MIRAM data files, and spooled files. Output from the PUNCH command may be directed to either an actual or spooled punch. The command is executed in such a way to permit you to continue entering commands while the PUNCH command is being executed. The PUNCH command issues you a message when it has completed execution.

You may use more than one line of the workstation screen to enter this command and its associated parameters. To do this, place a dash (-) as the last character in the first line of the command. The system recognizes the dash as a continuation character and asks you (in a message) for further input. You may use as many lines of the screen as you wish; just place a dash at the end of every line except the line on which the parameter string ends.

Note: *The PUNCH command punches only fixed-length, 80-character records. If your file has records with more than 80 characters and you use the PUNCH command, the records are truncated.*

The PUNCH command is divided into the following five formats:

Format 1 (Punching a Library Module)

```
                            ┌                         ┐┌┌                               ┐┐
PUNCH MODULE=modulename     │,TYPE= ⎧module-type⎫     ││ │,FILENAME= ⎧filename  ⎫        │
                            │       ⎩S          ⎭     ││ │           ⎨'filename'⎬        │
                            └                         ┘│ │           ⎩"filename"⎭        │
                                                       └                                 ┘

   [,RDPASS],VSN=volume ┌,COPIES= ⎧n⎫ ┐Δ[DIRECT][,WAIT]
                        │         ⎩1⎭ │
                        └             ┘
```

Command Options

`DIRECT`

Specifies that an actual punch is to be assigned to punch the file requested in the command. When DIRECT is not specified, the file requested will be copied to a spool file. Then, when a punch becomes available, the file will be punched. If DIRECT is specified and no punch is available, you will receive an error message at the workstation. The default condition is that the file be spooled.

`WAIT`

Specifies that control is not returned to WORKSTATION mode until the PUNCH command has completed execution. Normally, when you issue a PUNCH command, a background task is created, and the PUNCH command executes as a background job, allowing you to continue to use WORKSTATION mode for user or system programs. However, there may be times when you want to be sure the PUNCH operation has been completed successfully before going on with your program, such as when you are making a backup copy of a file. In this case, entering the WAIT keyword with the PUNCH command causes WORKSTATION mode to be stopped until the command has completed execution.

Format 2 (Punching a MIRAM Data File)

```
PUNCHΔFILENAME= ⎧filename  ⎫ [,RDPASS=password],VSN=volume ┌,KEYNO= ⎧n⎫┐
                ⎨'filename'⎬                               │        ⎩0⎭│
                ⎩"filename"⎭                               └           ┘

 ┌,COPIES= ⎧n⎫┐┌,DEVICE= ⎧did     ⎫┐Δ[DIRECT][,WAIT]
 └         ⎩1⎭┘│         ⎨DISKETTE⎬│
               └         ⎩DISK    ⎭┘
```

Command Options

DIRECT

Specifies that an actual punch is to be assigned to punch the file requested in the command. When DIRECT is not specified, the file requested will be copied to a spool file. Then, when a punch becomes available, the file will be punched. If DIRECT is specified and no punch is available, you will receive an error message at the workstation. The default condition is that the file be spooled.

WAIT

Specifies that control is not returned to WORKSTATION mode until the PUNCH command has completed execution. Normally, when you issue a PUNCH command, a background task is created, and the PUNCH command executes as a background job, allowing you to continue to use WORKSTATION mode for user or system programs. However, there may be times when you want to be sure the PUNCH operation has been completed successfully before going on with your program, such as when you are making a backup copy of a file. In this case, entering the WAIT keyword with the PUNCH command causes WORKSTATION mode to be stopped until the command has completed execution.

Format 3 (To Punch a Spool File)

```
PUNCHΔ[JOB=jobname] ⎡,HOLD= ⎧L⎫⎤ ⎡,FILENAME= ⎧ filename  ⎫⎤ [,ACCT=acct]
                    ⎢       ⎨N⎬⎥ ⎢           ⎨'filename' ⎬⎥
                    ⎣       ⎩Y⎭⎦ ⎢           ⎩"filename" ⎭⎥
                                 ⎣                        ⎦

    ,QUEUE= ⎧LOG  ⎫ ⎡,ALL= ⎧YES⎫⎤ ⎡,COPIES= ⎧n⎫⎤ ⎡,SKIP= ⎧n⎫⎤ Δ[DIRECT][,WAIT]
            ⎪PRINT⎪ ⎣      ⎩NO ⎭⎦ ⎣         ⎩1⎭⎦ ⎣       ⎩0⎭⎦
            ⎨PUNCH⎬
            ⎩RDR  ⎭
```

Command Options

DIRECT

Specifies that an actual punch is to be assigned to punch the file requested in the command. When DIRECT is not specified, the file requested will be copied to a spool file. Then, when a punch becomes available, the file will be punched. If DIRECT is specified and no punch is available, you will receive an error message at the workstation. The default condition is that the file be spooled.

WAIT

Specifies that control is not returned to WORKSTATION mode until the PUNCH command has completed execution. Normally, when you issue a PUNCH command, a background task is created, and the PUNCH command executes as a background job, allowing you to continue to use WORKSTATION mode for user or system programs. However, there may be times when you want to be sure the PUNCH operation has been completed successfully before going on with your program, such as when you are making a backup copy of a file. In this case, entering the WAIT keyword with the PUNCH command causes WORKSTATION mode to be stopped until the command has completed execution.

Format 4 (Punching a Tape File)

```
PUNCHΔ ⎡ FILENAME= ⎧ filename  ⎫⎤ [,RDPASS=password],VSN=volume,DEVICE= ⎧did ⎫
       ⎢           ⎨'filename' ⎬⎥                                       ⎩TAPE⎭
       ⎢           ⎩"filename" ⎭⎥
       ⎣                        ⎦

   ⎡,BKNO= ⎧YES⎫⎤ Δ[DIRECT][,WAIT]
   ⎣       ⎩NO ⎭⎦
```

Command Options

DIRECT

Specifies that an actual punch is to be assigned to punch the file requested in the command. When DIRECT is not specified, the file requested will be copied to a spool file. Then, when a punch becomes available, the file will be punched. If DIRECT is specified and no punch is available, you will receive an error message at the workstation. The default condition is that the file be spooled.

WAIT

Specifies that control is not returned to WORKSTATION mode until the PUNCH command has completed execution. Normally, when you issue a PUNCH command, a background task is created, and the PUNCH command executes as a background job, allowing you to continue to use WORKSTATION mode for user or system programs. However, there may be times when you want to be sure the PUNCH operation has been completed successfully before going on with your program, such as when you are making a backup copy of a file. In this case, entering the WAIT keyword with the PUNCH command causes WORKSTATION mode to be stopped until the command has completed execution.

Format 5 (Punching a Unit Record File)

```
PUNCHΔDEVICE= ⎧did     ⎫ ,FILENAME= ⎧filename  ⎫ ,VSN=volume
              ⎨DISKETTE⎬            ⎨'filename'⎬
              ⎩RDR     ⎭            ⎩"filename"⎭

     Δ[DIRECT][,WAIT]
```

Note: *The FILENAME= and VSN= parameters are required only when using a diskette.*

Command Options

DIRECT

Specifies that an actual punch is to be assigned to punch the file requested in the command. When DIRECT is not specified, the file requested will be copied to a spool file. Then, when a punch becomes available, the file will be punched. If DIRECT is specified and no punch is available, you will receive an error message at the workstation. The default condition is that the file be spooled.

```
WAIT
```

Specifies that control is not returned to WORKSTATION mode until the PUNCH command has completed execution. Normally, when you issue a PUNCH command, a background task is created, and the PUNCH command executes as a background job, allowing you to continue to use WORKSTATION mode for user or system programs. However, there may be times when you want to be sure the PUNCH operation has been completed successfully before going on with your program, such as when you are making a backup copy of a file. In this case, entering the WAIT keyword with the PUNCH command causes WORKSTATION mode to be stopped until the command has completed execution.

Examples

```
PUN FILENAME=PAYFILE,VSN=D00063
```

In this example, a punched card copy is made of a file name PAYFILE, located on volume D00063.

```
PUN FILENAME=PUNCHIT,QUEUE=PRINT,COPIES=5
```

In this example, a punched card copy is made of the spooled file PUNCHIT, located in the PRINT spool file directory. Five copies will be made of the file.

The following conditions could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were improperly entered.

- File or Volume Not Available

  The file or volume you requested is not available for access.

- Spooling Not Configured

  The spooling process was not configured at the time your system was generated. Therefore, no spool files are available to access.

- Punch Not Available

  There is no punch available to punch the requested file or module. The file or module is copied to a spool file and punched when a punch becomes available. Spool files remain in queue and are punched when a punch becomes available.

- Invalid Password

  The password or passwords you entered are invalid.

3.4.17. Displaying All or Part of the Log File (RECALL Command)

The RECALL command lets you display all or part of your workstation log file at your workstation or console screen. You can view selected portions of the log file by specifying a particular time span (for instance, from 9:00 to 10:00). Or, you can indicate the number of messages, prior to the most current one, that you'd like to see.

If you issue the command from the system console, the RECALL command will only use the lines that are available on the screen for the RECALL command.

If you issue the command from a workstation that is free (that is, not allocated to a job), the RECALL command uses the entire screen to display the log file. If the screen fills up before the display is finished, the following system message appears:

```
nn LRxxxx LR05  CONTINUE? (Y OR N)
```

To continue the display, key in the message prefix (nn) and Y. To end it, key in the message prefix (nn) and N.

If your workstation is allocated to another job when you issue the RECALL command, the log file appears one record at a time on the second line of the system messages area of the screen. You must hit the XMIT key after each record is displayed in order to see the next one.

If you are specifying a time period and you accidentally enter an invalid starting or ending time, the RECALL command displays the message:

```
nn  LRxxxx LR02  LIMIT INVALID. CONTINUE? (Y OR N)
```

If you key in Y, the RECALL command substitutes a default time in place of the invalid time you entered. If you key in N, you cancel the command and you're free to reenter it with the correct times. If you accidentally enter an invalid number of messages, the RECALL command ignores your entry and starts at the first message in the log file.

Format

```
RECALLΔ ⎧LASTΔnn          ⎫  ,PREFIX
        ⎩hh:mm:ss-hh:mm:ss⎭
```

Command Parameters

LASTΔnn

Indicates the number of messages in the log file that you wish to see. The keyword LAST must be separated from the number of messages (nn) by a space.

`hh:mm:ss-hh:mm:ss`

Indicates that you wish to see the contents of the log file for a particular time period. The minutes (mm) and seconds (ss) are optional. You must, however, separate the beginning time from the ending time with a dash (-). All time must be specified in military time.

You can specify a beginning time without specifying an ending time. In this case, the log display starts at the time you specify and ends at the end of the log file. Similarly, you can specify an ending time without specifying a beginning time. In this case, the log display starts at the beginning of the file and ends at the time you specified. When keying in an ending time by itself, you must prefix it with a dash (-).

`PREFIX`

Indicates that you wish to see messages within the specified time span with a prefix that starts with the indicated character. The prefix can be from 1 to 8 characters long.

Examples

```
RECALL LAST 24
```

In this example, only the last 24 log file entries are displayed.

```
RECALL 15:30-16
```

In this example, all the log file entries from 15:30:00 (3:30 p.m.) to 16:00:00 (4:00 p.m.) are displayed.

```
RECALL 8:30
```

In this example, the log file display starts at 8:30:00 (8:30 a.m.) and continues to the end of the file.

```
RECALL -17
```

In this example, the log file display starts at the beginning of the file and continues till the ending time is reached (17:00:00 or 5:00 p.m.).

```
RECALL 1:00-3:00,FSTAT005
```

In this example, all log entries from 1:00 (a.m.) to 3:00 (a.m.) with a message prefix of FSTAT005 will be displayed.

```
RECALL ,JOBX
```

In this example, all messages in the log with JOBX as the first 4 characters of the prefix will be displayed.

The following conditions could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were improperly entered.

- Logging Not Active

  Workstation logging is not active; therefore, no log file is created. Workstation logging is not active if you did not specify it at SYSGEN time with the CONSOLOG parameter or later with the operator's spooling command, SET SPL, CNSLG.

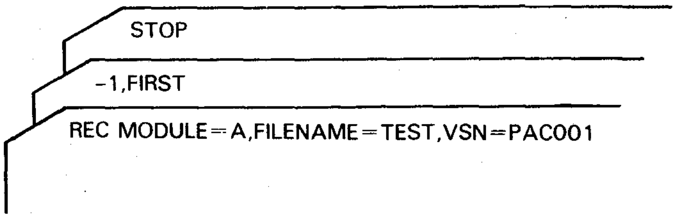
Note: *The RECALL command will not span the time change at midnight; to use it from 23:00 to 1:00, you must use the RECALL command twice.*

3.4.18. Recovering Deleted Modules (RECOVER Command)

The RECOVER command enables you to recover deleted source, procedure, or macro modules in the SAT library. The command functions by listing, for the file specified, all deleted modules of the module type specified in the parameter you enter with the RECOVER command. Each module displayed is numbered, as well as being listed with its header comment, date, and time it was created. Modules that are not deleted but have the same module name as that specified in the command parameters are also displayed. These modules are displayed with an indicator to show that they are not deleted. When you have reviewed the complete display, the system allows you to choose one of the modules displayed and give it a new name. Renaming the module "undeletes" it. *This command may also be used to rename modules not deleted.* The new name you give the module must be unique; duplicates are not permitted. The RECOVER command can recover only the modules since the last LIBS PAC operation was performed. The LIBS PAC routine that reorganizes file space destroys all deleted modules. You must choose the module to be recovered carefully because the RECOVER display could show you several very similar modules.

You may use the RECOVER command in an ENTER stream by observing certain special procedures. The RECOVER command requires three cards to execute in an ENTER stream. The first card contains the RECOVER command and its associated file parameters. The second card indicates which copy of the module specified by the file parameters you want recovered and the new name you want to give the recovered module. Entering a zero indicates that you want the most recent copy of the module recovered; a minus 1 (-1) indicates you want the next most recent copy; minus 2 (-2), the next most recent; etc. The third card simply says STOP to end the RECOVER command.

The following is an example of the use of the RECOVER command in an ENTER stream:



```
STOP
-1,FIRST
REC MODULE=A,FILENAME=TEST,VSN=PAC001
```

Note: *Only one RECOVER command may be processed at a time. You may not enter another RECOVER until the command currently being processed is completed.*

The RECOVER command issues a message to you, informing you it has completed execution.

You may use more than one line of the workstation screen to enter this command and its associated parameters. To do this, place a dash (-) as the last character in the first line of the command. The system recognizes the dash as a continuation character and asks you (in a message) for further input. You may use as many lines of the screen as you wish; just place a dash at the end of every line except the line on which the parameter string ends.

Format

```
RECOVER∆MODULE=modulename ⎡,TYPE= ⎧module-type⎫⎤ ,FILENAME= ⎧filename  ⎫
                          ⎢       ⎩$          ⎭⎥            ⎨'filename'⎬
                          ⎣                    ⎦            ⎩"filename"⎭

   [,RDPASS=password][,WRPASS=password],VSN=volume
```

Example

```
REC MODULE=A,FILENAME=TEST,VSN=PAC001
```

In this example, the user is seeking to recover source modules named A. The deleted modules reside in a file named TEST, on the PAC001 volume. Entering this produces the following displays:

```
11 REC946 01 A        COPY ONE                         80/02/15  16:49
12 REC946 02 A        COPY TWO                         80/02/15  16:49
13 REC946 03*A        COPY THREE                       80/02/15  16:49
14?REC946 IS56 ENTER ''ELEMENT-NUMBER, NEW-NAME'' OR ''STOP''
14 1,FIRST
15 REC946 01 A        COPY TWO                         80/02/15  16:49
16 REC946 02*A        COPY THREE                       80/02/15  16:49
17?REC946 IS56 ENTER ''ELEMENT-NUMBER, NEW-NAME'' OR ''STOP''
17 STOP
18 REC946 IS90 RECOVER   COMMAND TERMINATED NORMALLY
```

Lines 1, 2, 3, and 4 are displayed after you enter the RECOVER command. They show all the modules that match the specifications you entered with the command. Line 4 is message IS56, asking you to enter either the number of, and a new name for, the module you wish to recover, or STOP, to terminate the RECOVER command. Line 5 shows that the user has entered 1,FIRST. Therefore, the first module shown in the display will be recovered, and renamed FIRST instead of A. In lines 6, 7, and 8, the RECOVER command continues, displaying the remaining modules matching the specifications entered with the command. On line 9, the user has entered STOP, terminating the RECOVER command. Line 10 shows the message indicating that the RECOVER command has terminated normally.

If the user enters an FSTATUS command to display the modules in the file named TEST, he will see a display showing the recovered module now named FIRST:

```
11 FSTAT456 FSTATUS  FILENAME=TEST,VSN=RES LONG
12 FSTAT456 S-FIRST       COPY ONE                  80/02/15  16:49
13 FSTAT456 IS83 FSTATUS FINISHED, 00001 ELEMENTS WERE DISPLAYED
```

The following conditions could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were improperly entered.

- No Deleted Modules

  There are no deleted modules in the file specified.

- Attempt to Duplicate Existing Name

  In renaming a module in order to undelete it, you specified a name already in use by a module. The name you use must not be in use by a module that has not been deleted.

- File or Volume Not Available

  The file or volume you requested is not available for access.

- Invalid Password

  The password or passwords you entered are not valid.

3.4.19. Inserting a Comment in a Command Stream (REMARK Command)

The REMARK command allows you to enter a comment in a stream of commands. This command is different from the COMMENT command, which allows you to add a comment to a library module header. The principal use of the REMARK command is in card decks for batch processing, but it may be used in any situation to include a command in a comment stream. The command and text generate no output to the workstation.

You may use more than one line of the workstation screen to enter this command and its associated parameters. To do this, place a dash (-) as the last character in the first line of the command. The system recognizes the dash as a continuation character and asks you (in a message) for further input. You may use as many lines of the screen as you wish; just place a dash at the end of every line except the line on which the parameter string ends.

Format

```
REMARKΔtext
```

Command Option

`text`

Is the text of the comment. The total length of the command and its associated text must be a maximum of 60 charaters.

Example

```
REM THIS DECK EXECUTES PAYJOB
```

In this example, the user is inserting a comment to indicate that the card deck referred to executes the program PAYJOB.

The following condition could cause this command to be rejected:

- Incorrect Syntax

The command was misspelled or ambiguous.

3.4.20 Terminating User Tasks or Sessions (REMOVE Command)

The REMOVE command terminates a single command, a specific workstation or terminal user session, or all user sessions. After the termination, a cancellation message is displayed on the terminated user's screen.

Format

```
REMOVEΔ ⎧task-id⎫
        ⎨user-id⎬
        ⎩ALL    ⎭
```

where:

`task-id`
Specifies the particular task under which a command is to terminate. Task-ids can be determined using the STATUS FUNCTION command.

`user-id`
Specifies the particular user whose session is to terminate. User-ids can be determined using the STATUS TERMINAL command. All interactive functions for the user-id specified are terminated and the user is logged off. If the user is running an interactive session as a batch job (via ENTER), the user is logged off but the session is not affected. A message is displayed on the console workstation or console screen to indicate when the user cannot be logged off.

`ALL`
Specifies all user sessions and batch runs for each user-id that can be controlled by this user. All interactive functions are terminated and the users are logged off. Users running interactive sessions as batch jobs (via ENTER) are logged off. A message indicating which users cannot be logged off is displayed on the console workstation or console screen.

3.4.21. Obtaining System Status Information (STATUS Command)

The STATUS command enables you to obtain information about various aspects of your system, including usage of terminals and workstations, number of jobs running on the system, system storage resources in use and available, information on jobs running under your user-id, and interactive commands and facilities being performed under your user-id. STATUS can also give you a listing of the disk, tape, and diskette volumes currently mounted on your system, and the terminal name. This applies to all workstation types, local or remote.

Format

```
STATUSΔ [ ⎧ TERMINALS ⎫ ]
        [ ⎪ RESOURCES ⎪ ]
        [ ⎨ JOBS      ⎬ ]
        [ ⎪ FUNCTIONS ⎪ ]
        [ ⎪ VOLUMES   ⎪ ]
        [ ⎩ LIMITS    ⎭ ]
```

The output of the STATUS command depends on which, if any, of the command options you enter.

Example

```
STA
```

Entering the STATUS command with no command option produces a display of your user-id, the current date and time, and the job name of the job, if any, to which your workstation is connected.

```
terminal-id     user-id     mm/dd/yy     hh:mm     jobname
```

Example

```
STA T
```

Entering the STATUS command with the command option TERMINALS produces a display similar to the following:

```
11 STATU678 TRM  USERID   TRM  USERID   TRM  USERID   TRM  USERID
12 STATU678 C14  USERA    BB01 JOE      C53  ANDY     C11  BETH
13 STATU678 C16  BILLPR   TRM3 MIKE     C42  JIM      C33  CAROL
14 STATU678 IS90 STATUS   COMMAND TERMINATED NORMALLY
```

where:

```
TRM
```

Is the physical device address of local workstations. It is the logical name of remote workstations and terminals assigned during ICAM generation.

```
USERID
```

Is the user-id of the person currently logged on at the workstation or terminal.

The display shows 4 groups of terminals and user-ids across a line. This is useful in systems with many users logged on.

When the system administrator, operator, or user with global status privileges issues a STAT T command in a secure system, a display appears showing all the terminals at which at least one invalid logon was attempted. It also shows the number of logon attempts remaining for each terminal and the current limit.

```
MAXLOGON LIMIT IS CURRENTLY __
```

if no invalid logons have occurred

```
TRM             LOGON           TRIES LEFT


C12                             3
(MAXLOGONS)                     5
```

when someone has attempted an invalid logon

Example

```
STA R
```

Entering the STATUS command with the command option RESOURCES produces a display similar to the following:

```
15 STATU678 BUFFERS     INT  ENT  BCK  JOBS    SYS-SIZE
16 STATU678 014/003640  001  001  000  00/07   0491520
```

where:

```
BUFFERS
```

Shows the number of dynamic storage buffers allocated to interactive users, together with the total size (in bytes) of those buffers. The first number is the number of buffers; the second, the total size.

```
INT
```

Shows the number of interactive tasks running on the system.

```
ENT
```

Shows the number of ENTER command streams being run on the system.

```
BCK
```

Shows the number of background (batch) tasks running on the system.

```
JOBS
```

Shows, first, the number of system job slots in use; second, the number of job slots configured on the system.

```
SYS-SIZE
```

Shows the amount of main storage present in the system. This figure does not change unless more main storage is physically added to your system.

Example

```
STA J
```

Entering the STATUS command with the command option JOBS produces a display similar to the following:

```
18 STATU678 JOBNAME     SIZE     CPU TIME    STEP  EXEC    JOB NO  MASTER
19 STATU678 ASMBLY      040,960     12.1      01   ASM000  00012    USERA
20 STATU678 COBOLJOB    073,862    125.6      02   COBOL0  00015    USERA
21 STATU678 RPGLINK     016,384      5.4      01   LNKEDT  00016    USERA
22 STATU678 UNUSED MEMORY    0,388,352            LARGEST REGION  148,624
```

where:

```
JOBNAME
```

Is the name of the job running on the system.

```
SIZE
```

Shows the amount of main storage, in bytes, being used by the job.

CPU TIME
Shows the amount of time the job has used the central processing unit.

STEP
Shows the number of the job step currently in execution.

EXEC
Is the name of the program (within the job) currently being executed.

JOB NO
Gives the job accounting number assigned to the job by the system.

MASTER
Shows the user-id of the master workstation controlling the job.

UNUSED MEMORY
Shows the total free main storage available.

LARGEST REGION
Shows the size of the largest free region of main storage.

Example

```
STA F
```

Entering the STATUS command with the command option FUNCTIONS produces a display similar to the following:

```
14 STATU678 USERID    COMMAND    MODE    ID     STATUS
15 STATU678 USERA       EDT        I     001
16 STATU678 USERA      PRINT       B     002
17 STATU678  IS90 STATUS COMMAND TERMINATED NORMALLY
```

where:

USERID
Is your user-id. *Only commands running under your user-id are displayed unless you have been given global status privileges by the system administrator.*

COMMAND
Lists by name the commands being executed.

MODE

Shows in which mode (interactive or background) the command is being executed. Some commands, such as PRINT, can be executed as batch jobs to avoid tying up WORKSTATION mode for long periods of time while the command is executing.

ID

Is the internal task number assigned to the command by the system.

A STATUS F command from the system console, system administrator, or any user with global status privileges will show all functions active under Interactive Services. A terminal logging on or off will have asterisks around the terminal-id rather than the user-id.

Example

```
STA V
```

Entering the STATUS command with the command option VOLUMES produces a display similar to the following:

```
14 STATU678 D-REL070     D-REL052    T-BACKUP     F-WORK20
15 STATU678 IS90 STATUS COMMAND TERMINATED NORMALLY
```

where:

D

Prefacing the volume serial number with a D (as in D-REL070 in the sample screen) indicates that the volume is a disk volume.

T

Prefacing the volume serial number indicates that the volume is a tape volume or a data set label diskette volume.

F

Prefacing the volume serial number indicates that the volume is a format label diskette volume.

Example

```
STA L
```

Entering the STATUS command with the command option LIMITS shows you the resource management limits currently in effect, plus actual current usage. The display appears in the following format:

```
15 STATU678 JOBS      WSJOBS        SWSJOBS       INTUSER       ENTERS       RUNSYMBS
16 STATU678 xx/yy     xx/yy            xx         xx/yy         xx/yy        xx/yy
17 STATU678       SYMBMEM                   INTMEM                     JOBMEM
18 STATU678 xx/yy% ssss/ssssK       xx/yy% ssss/ssssK          xx/yy% ssss/ssssK
```

where:

`JOBS`
`xx/yy`
: Shows you the actual number of jobs currently in execution (xx) versus the maximum number of jobs allowed to run concurrently (yy).

`WSJOBS`
`xx/yy`
: Shows you the actual number of jobs currently running that were initiated from workstations (xx) versus the maximum number permitted to run at the same time (yy).

`SWSJOBS`
`xx`
: Shows you how many jobs can be executed from a single workstation at any one time.

`INTUSER`
`xx/yy`
: Shows you the actual numbers of users currently logged on to the system (xx) versus the maximum number of interactive users permitted at one time (yy).

`ENTERS`
`xx/yy`
: Shows you the actual number of batch sessions (ENTER streams) currently running (xx) versus the maximum permitted at any one time (yy).

`RUNSYMBS`
`xx/yy`
: Shows you the actual number of RUN symbionts currently active (xx) versus the maximum number permitted at any one time (yy).

SYMBMEM
xx/yy% ssss/ssssK

Shows you the actual percentage of available main storage that symbionts are currently using (xx) versus the maximum percentage allowed by resource management (yy). In addition, it shows how much main storage these percentages amount to. The first ssss value is the amount actually in use; the second ssss value is the maximum amount permitted. (Amounts are given in K values, where K=1024 bytes.) If no limits were set for symbiont memory, NL appears on the display.

INTMEM
xx/yy% ssss/ssssK

Shows you the percentage of available main storage currently used for interactivity (xx) versus the maximum percentage allowed by resource management (yy). In addition, it shows you how much storage these percentages amount to. The first ssss value is the amount actually in use; the second ssss value is the maximum allowed. (Amounts are given in K values, where K=1024 bytes.) If no limits were set for interactive memory, NL appears as the value on the display.

JOBMEM
xx/yy% ssss/ssssK

Shows you the percentage of available main storage your system is currently using to process jobs (xx) versus the maximum percentage allowed by resource management (yy). In addition, it shows how much main storage these percentages amount to. The first ssss value is the amount actually in use; the second ssss value is the maximum amount permitted. (Amounts are given in K values, where K=1024 bytes.) If no limits were set for job memory, NL appears as the value on the display.

The following is a sample of a STATUS LIMITS display:

```
20 STATU678 JOBS        WSJOBS       SWSJOBS       INTUSER     ENTERS     RUNSYMBS
21 STATU678 2/10         1/07            1          12/15       10/30      1/01
22 STATU678      SYMBMEM              INTMEM              JOBMEM
23 STATU678 5/10% 30/60K         55/80% 330/480K       8/10% 48/60K
```

This display tells you:

- There are currently two jobs running out of a possible 10 job slots.
- One of the jobs running was initiated from a workstation. This is one out of a possible seven jobs that can be initiated from workstations.
- A workstation user can only run job at a time.

- Twelve users are logged on to the system out of a possible 15.
- Ten enter streams are currently running out of a possible 30.
- Symbionts are currently using 5% (or 30K) of available main storage out of a possible 10% (or 60K)).
- Fifty-five percent (or 330K) of available main storage is being used for interactivity out of a possible 80% (or 480K).
- Job processing is using 8% (or 48K) of available main storage out of a possible 10% (or 60K).

The system administrator can obtain more information at his workstation than the other terminal users with the following commands:

- STATUS JOBS

  The system administrator or global status user entering the STATUS command with the option JOBS from the workstation is shown the status of all jobs running on the system, as well as the jobs he initiated.

- STATUS FUNCTIONS

  The system administrator entering the STATUS command with the option FUNCTION from his workstation is shown all commands executing for all users on the system, as well as those for his user-id.

- STATUS TERMINALS

  The system administrator entering the STATUS command with the option TERMINALS from his workstation is shown the status all terminals currently logged on, plus a list of all terminals with at least one invalid logon attempt and the number of tries each one has left.

The following condition could cause this command to be rejected:

- Incorrect Syntax

  The command was mispelled or ambiguous, or the command or parameters were improperly entered.

3.4.22. Listing the Contents of a VTOC (VTOC Command)

The VTOC command enables you to produce a listing of the files present on a disk or diskette volume. The listing may contain all the files on the volume, or just those whose names match a prefix you specify with the command. For disk and format-label diskettes, the listing for each file gives the file name, file size and type, and extent information. After the last file has been listed, a count of free cylinders left on the disk or diskette is given. For data-set-label diskettes, the listing for each file gives the file name, the starting and ending addresses of each file, and the file's block size and record size.

Note: *Only one VTOC command may be executed at a time. You must wait until the currently executing VTOC command finishes before entering another.*

If you have issued an @SY VTOC command from the editor and you do not want to see the entire output of your VTOC listing, pressing function key 1 or 18 will terminate the VTOC command and display an ED087 message.

You may use more than one line of the workstation screen to enter this command and its associated parameters. To do this, place a dash (-) as the last character in the first line of the command. The system recognizes the dash as a continuation character and asks you (in a message) for further input. You may use as many lines of the screen as you wish; just place a dash at the end of every line except the line on which the parameter string ends.

Format

```
VTOCΔ['file-prefix',]VSN=volumeΔ[FREE]
```

Command Options

`file-prefix`

Specifies a full (such as JOBDUMP) or a partial (such as JOB) file name. If you enter a file prefix, the listing produced will show only those files whose file names match the prefix specified. *This parameter must be enclosed in apostrophes.*

`FREE`

Specifies that you also want a listing of each free extent available on the volume you are referencing. For disk and format-label diskette volumes, this parameter gives the size of each free extent in cylinders and tracks. For data-set-label diskettes, this parameter gives you the beginning and ending addresses, and size (in sectors) of each free extent.

Examples

1. For a disk volume:

```
VT RES FREE
```

In this example, the VTOC command is used to produce a listing of the files present on the disk volume named RES (the system RESident disk pack). Since we specified the FREE option, we will receive a listing of the size of each free extent. The following display is produced:

```
  FILENAME          TYPE  EXT  CYL  %DIR  %DATA  %THIRD  AVAIL.

$VTOC               MIRAM 001  001
SCSCOR              SAT   001  001     0      0       0      80
SYSACAT             SAT   001  001     4      0       0       0
SYSDUMP             SAT   002  015   100      0       0       0
SYSJCS              SAT   004  021    19     81       0    2920
SYSOBJ              SAT   004  009    52     35       0    1200
SYSMAC              SAT   007  046    22     97       0       0
SYSSRC              SAT   001  009     5     91       0     920
SYSTRAN             SAT   001  012    89     97       0       0
SYSTRANA            SAT   001  012    89     97       0       0
```

On the display:

- FILENAME gives the name of the file.
- TYPE gives the type of file, that is, the access technique used to create the file.
- EXT gives the number of extents that, together, make up the file.
- CYL gives the size of the file in total number of cylinders composing the file.
- %DIR expresses in percentage how much of the directory portion of the file has been used up.
- %DATA expresses in percentage how much of the data portion of the file has been used up.
- %THIRD expresses in percentage how much of the third portion of the file (the portion containing block load modules) is used up.
- AVAIL gives the amount of space (expressed in number of blocks) and how much space of the file is unused *and* unassigned to the directory, data, or block load module portions of the file.

If the VTOC listing requires more than 24 lines to display, the listing will continue to roll up from the bottom of the screen, and some of the initial listings of the VTOC will be rolled off the screen.

```
  FILENAME            TYPE  EXT  CYL    %DIR   %DATA  %THIRD   AVAIL.

$Y$ELOG               SAT   001  005      0       0       0       0
$Y$ESUM               SAT   001  001      0       0       0       0
$Y$SHR                SAT   001  001      0       0       0       0
$Y$SYSTEMTABLES       SAT   001  001      0       0       0       0
$Y$MIC                SAT   001  002      0       0       0       0
$Y$SCLOD              SAT   002  003     30      96       0       0
$Y$FMT                MIRAM 001  002
SG$OBJ                SAT   001  016     30      86       0    1920
SG$MAC                SAT   002  021      6      98       0    2080
FREE SPACE: CYLINDERS 001, TRACKS 000
FREE SPACE: CYLINDERS 415, TRACKS 000
TOTAL FREE: CYLINDERS 416, TRACKS 000
```

This display concludes the disk volume RES VTOC listing. The count of free cylinders is visible at the bottom of the display.

2. For data-set-label diskettes:

```
VT MYVOL1 FREE
```

In this example, the VTOC command is used to produce a listing of the files present on the data-set-label diskette volume named MYVOL1. Since the command includes the FREE option, the listing shows the size of each free extent, along with the starting and ending addresses of each extent:

```
FILENAME           START OF       END OF     END OF   BLOCK    RECORD
                     FILE          FILE       DATA    SIZE      SIZE
 FIL1              01 0 01       02 1 22    01 0 01    128       128
 FIL2              02 1 23       07 1 12    02 1 23    256       256
 FIL3              07 1 13       13 0 26    07 1 13    256       256
 FIL4              13 1 01       14 0 24    13 1 01    256       256
 AAA               44 0 08       63 0 19    44 0 08    128       128
 FIL6              15 0 16       24 1 21    15 0 16    256       256
 TST               63 0 20       65 0 15    63 0 20    128       128

FREE EXTENTS     START        END        SIZE (IN SECTORS)
               14 0 25      15 0 15          43
               24 1 22      44 0 07        1000
               65 0 16      74 1 26         505
IS90 VTOC      COMMAND TERMINATED NORMALLY
```

On the display:

- FILENAME gives the name of the file.
- START OF FILE gives the diskette address where the file begins. The format is track-side-sector.
- END OF FILE gives the ending diskette address for the file.
- END OF DATA gives the diskette address of the last sector to be used for data within the file.
- BLOCK SIZE gives the size of the block written to the file.
- RECORD SIZE gives the size of the records which make up the file.

The FREE EXTENTS information at the bottom of the display is listed because the FREE option was specified. This display shows the following:

- START gives the diskette address where the free extent begins. The format is track-side-sector.
- END gives the ending diskette address for the extent.
- SIZE gives the number of sectors available in this extent.

The following conditions could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled or ambiguous, or the command or parameters were improperly entered.

- Volume Not Available

  The volume you requested is not available.

3. For a catalogued file that resides on the disk with a vsn of PUB001:.

   ```
   VTOC 'CATFILE', PUB001
   ```

   In this example, the VTOC command is used to produce a listing showing the current file information and the volume serial number of the disk on which the file resides.

```
    ********************VTOC OF VOLUME PUB001 **********************
    FILENAME                TYPE  EXT   CYL %DIR %DATA  %THIRD  AVAIL.
  CATFILE                   MIRAMΔ002   002

** TOTAL FREE: CYLINDERS 111,  TRACKS 001 ON VOLUME PUB001 ***
```

On the display:

- FILENAME gives the name of the file.
- TYPE gives the type of the file, that is, the access technique used to create the file.
- EXT gives the number of extents that, together, make up the file.
- CYL gives the size of the file in total number of cylinders composing the file.
- %DIR expresses in percentage how much of the directory portion of the file has been used up.
- %DATA expresses in percentage how much of the third portion of the file (the portion containing block load modules) is used up.
- %THIRD expresses in percentage how much of the third portion of the file (the portion containing block load modules) is used up.
- AVAIL. gives the amount of space (expressed in number of blocks) and how much space of the file is unused and unassigned to the directory, data, or block load module portions of the file.

3.5. Commands to Control Workstation Logging

Use the following commands to control the process of *workstation logging*. Workstation logging automatically creates a record of all the system commands issued from your workstation, system messages sent to your workstation, and the responses you make to those messages. If you want it to include commands entered in workstation mode also, you can specify that with the LOG parameter of the SCREEN command (3.2.8). The record created is a *workstation log file*; it begins when you log on the workstation and ends when you either log off the workstation or *breakpoint* the log file for printing. Workstation logging is available if *console logging* (CONSOLOG parameter) is configured when your system is generated (SYSGEN). Workstation logging is available to both locally connected workstations and remote terminals acting as workstations. When you log on, use the LOG parameter of the LOGON command to specify whether the workstation log file is to be printed. See 1.3.2 for complete information on the LOGON command.

3.5.1. Breakpointing Workstation Log Files (BRKPT LOG Command)

The BRKPT LOG command enables you to close the workstation log file and make it available to the output writer for printing *before* you log off the workstation. A new workstation log file is started with the first message or command after the BRKPT LOG command is entered. The new workstation log file continues until it too is breakpointed, or you log off the workstation.

Format

```
BRKPTΔLOG  ⎡ ,OUT=⎧TAPE    ⎫ ⎤  [,HOLD]
           ⎢      ⎨DISK    ⎬ ⎥
           ⎣      ⎩DISKETTE⎭ ⎦
```

Command Options

```
OUT=⎧TAPE    ⎫
    ⎨DISK    ⎬
    ⎩DISKETTE⎭
```

Indicates where you would like to redirect the contents of your log. If you choose DISKETTE, it must be a format label diskette.

```
HOLD
```

Permits a log file to be held after the breakpoint has occurred.

If your BRKPT LOG command is accepted, you receive the following message:

```
31 BR483 BREAKPOINT TAKEN FOR WORKSTATION LOG yy/mm/dd USER=xxxxxx
```

where:

```
xxxxxx
```

Is your user-id.

If the BRKT LOG command is *not* accepted, you receive the following message:

```
32 BR483 WORKSTATION LOGGING NOT ACTIVE
```

This indicates that you did not specify that the workstation log was to be printed when you logged on, or that console logging was not specified at SYSGEN.

If an error occurs while the breakpoint is being taken, you receive the following message:

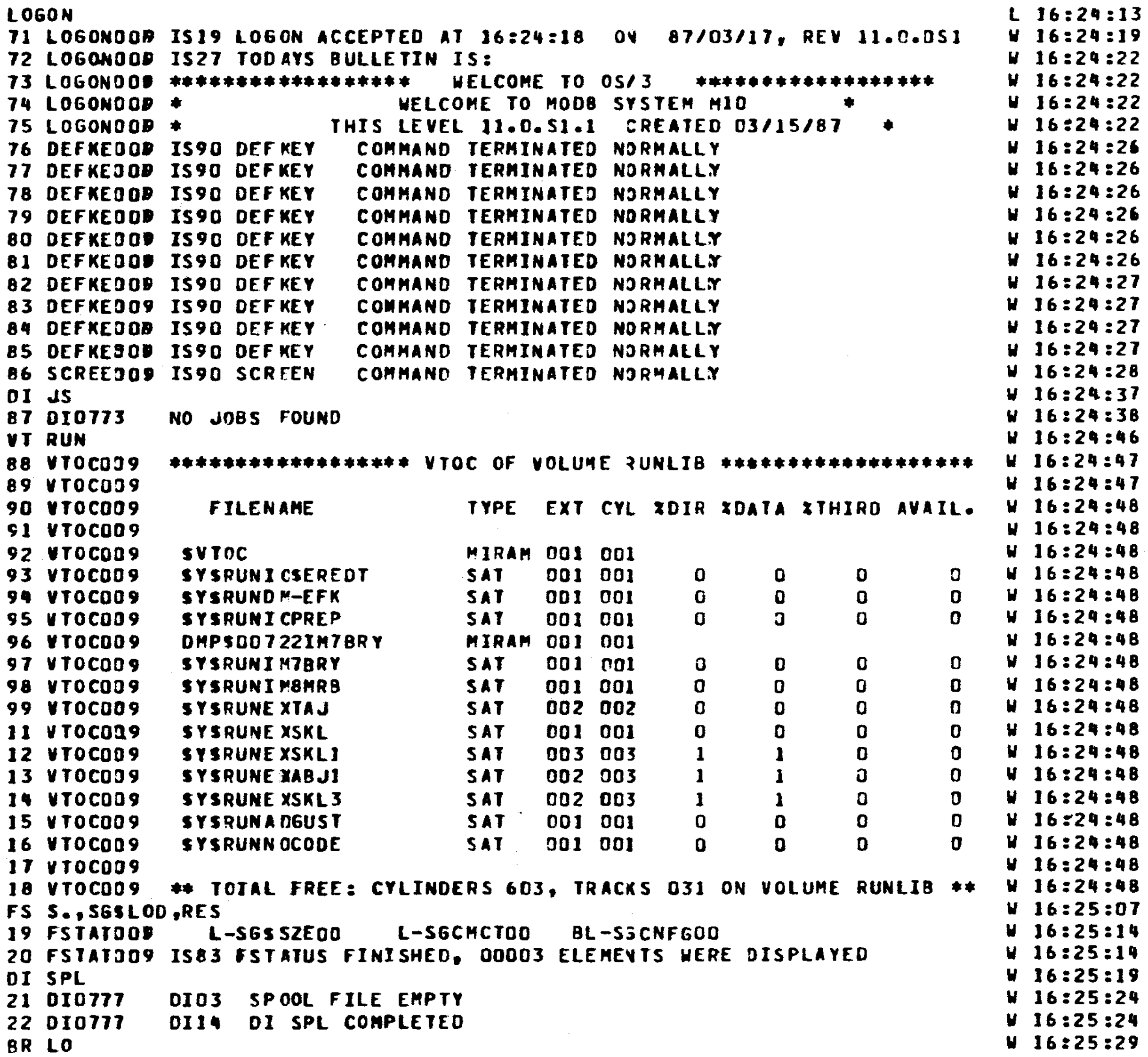
```
33 BR483 BREAKPOINT ERR WORKSTATION LOGGING SUSPENDED
```

Contact your system administrator if you receive this message.

If you specify anything other than TAPE, DISK, or DISKETTE for the OUT parameter, you receive this message:

```
34 BR483 BREAKPOINT ERR-INVALID OUT PARAMETER
```

The following is a sample printout of a breakpointed workstation log:



```
LOGON                                                                       L 16:24:13
71 LOGON009 IS19 LOGON ACCEPTED AT 16:24:18  ON  87/03/17, REV 11.0.0S1     W 16:24:19
72 LOGON009 IS27 TODAYS BULLETIN IS:                                        W 16:24:22
73 LOGON009 ******************  WELCOME TO OS/3   ******************        W 16:24:22
74 LOGON009 *                  WELCOME TO MOD8 SYSTEM M10        *          W 16:24:22
75 LOGON009 *             THIS LEVEL 11.0.S1.1  CREATED 03/15/87   *        W 16:24:22
76 DEFKE009 IS90 DEFKEY   COMMAND TERMINATED NORMALLY                       W 16:24:26
77 DEFKE009 IS90 DEFKEY   COMMAND TERMINATED NORMALLY                       W 16:24:26
78 DEFKE009 IS90 DEFKEY   COMMAND TERMINATED NORMALLY                       W 16:24:26
79 DEFKE009 IS90 DEFKEY   COMMAND TERMINATED NORMALLY                       W 16:24:26
80 DEFKE009 IS90 DEFKEY   COMMAND TERMINATED NORMALLY                       W 16:24:26
81 DEFKE009 IS90 DEFKEY   COMMAND TERMINATED NORMALLY                       W 16:24:26
82 DEFKE009 IS90 DEFKEY   COMMAND TERMINATED NORMALLY                       W 16:24:27
83 DEFKE009 IS90 DEFKEY   COMMAND TERMINATED NORMALLY                       W 16:24:27
84 DEFKE009 IS90 DEFKEY   COMMAND TERMINATED NORMALLY                       W 16:24:27
85 DEFKE009 IS90 DEFKEY   COMMAND TERMINATED NORMALLY                       W 16:24:27
86 SCREE009 IS90 SCREEN   COMMAND TERMINATED NORMALLY                       W 16:24:28
DI JS                                                                       W 16:24:37
87 DI0773   NO JOBS FOUND                                                   W 16:24:38
VT RUN                                                                      W 16:24:46
88 VTOC009  ****************** VTOC OF VOLUME RUNLIB *******************    W 16:24:47
89 VTOC009                                                                  W 16:24:47
90 VTOC009     FILENAME           TYPE  EXT CYL %DIR %DATA %THIRD AVAIL.    W 16:24:48
91 VTOC009                                                                  W 16:24:48
92 VTOC009   $VTOC                MIRAM 001 001                             W 16:24:48
93 VTOC009   $YSRUNICSEREDT       SAT   001 001   0     0     0      0      W 16:24:48
94 VTOC009   $YSRUNDM-EFK         SAT   001 001   0     0     0      0      W 16:24:48
95 VTOC009   $YSRUNICPREP         SAT   001 001   0     0     0      0      W 16:24:48
96 VTOC009   DMP$00722IM7BRY      MIRAM 001 001                             W 16:24:48
97 VTOC009   $YSRUNIM7BRY         SAT   001 001   0     0     0      0      W 16:24:48
98 VTOC009   $YSRUNIM8MRB         SAT   001 001   0     0     0      0      W 16:24:48
99 VTOC009   $YSRUNEXTAJ          SAT   002 002   0     0     0      0      W 16:24:48
11 VTOC009   $YSRUNEXSKL          SAT   001 001   0     0     0      0      W 16:24:48
12 VTOC009   $YSRUNEXSKL1         SAT   003 003   1     1     0      0      W 16:24:48
13 VTOC009   $YSRUNEXABJ1         SAT   002 003   1     1     0      0      W 16:24:48
14 VTOC009   $YSRUNEXSKL3         SAT   002 003   1     1     0      0      W 16:24:48
15 VTOC009   $YSRUNADGUST         SAT   001 001   0     0     0      0      W 16:24:48
16 VTOC009   $YSRUNNOCODE         SAT   001 001   0     0     0      0      W 16:24:48
17 VTOC009                                                                  W 16:24:48
18 VTOC009  ** TOTAL FREE: CYLINDERS 603, TRACKS 031 ON VOLUME RUNLIB **    W 16:24:48
FS S.,SG$LOD,RES                                                            W 16:25:07
19 FSTAT009    L-SG$SZE00    L-SGCMCT00   BL-SGCNFG00                       W 16:25:14
20 FSTAT009 IS83 FSTATUS FINISHED, 00003 ELEMENTS WERE DISPLAYED            W 16:25:14
DI SPL                                                                      W 16:25:19
21 DI0777   DI03  SPOOL FILE EMPTY                                          W 16:25:24
22 DI0777   DI14  DI SPL COMPLETED                                          W 16:25:24
BR LO                                                                       W 16:25:29
```

The following condition could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled, not entered correctly, or entered with parameters attached.

3.5.2. Obtaining Workstation Log Information (DISPLAY LOG Command)

The DISPLAY LOG command gives you a 1-line report on the status of your workstation log file. The display shows the number of workstation lines used since you logged on.

Format

```
DISPLAYΔLOG
```

There are no parameters associated with this command. The following is an example of the display produced by the DISPLAY LOG command:

```
TOTAL WORKSTATION LINES 0000063
```

If the command is not accepted, you receive the same message, WORKSTATION LOGGING NOT ACTIVE, as when the BRKPT LOG command is not accepted.

The following condition could cause this command to be rejected:

- Incorrect Syntax

  The command was misspelled, not entered correctly, or entered with parameters.

Section 4
Quick-Reference Guide to the Interactive Facilities, Distributed Data Processing, BASIC, and ESCORT

In this section, you will find information on the various interactive facilities, the distributed data processing (DDP) system, and the interactive programming languages BASIC and ESCORT, available with OS/3. The interactive facilities discussed here are:

- Screen format services
- Menu services
- OS/3 interactive data utilities
- Interactive dump/restore hardware utility
- General editor (EDT)

Included with the discussion of the general editor, are the three subeditors available:

- RPG II editor
- COBOL editor
- Error file processor

Another interactive facility, interactive job control stream preparation, has already been introduced to you in 2.2.

The information given herein is meant only for quick reference: to initialize the interactive facilities and DDP, or to refresh your memory concerning the commands and functions available through these facilities. For complete detailed information on the use of DDP, BASIC, ESCORT, and the interactive facilities, refer to the appropriate user guide. You will find a list of these in the "About This Guide" section.

4.1. Screen Format Services

The screen format services allow you to create, modify, and use formatted screen displays in your programs. Screen format services consist of two software products: the screen format generator and the screen format coordinator.

4.1.1. The Screen Format Generator

The screen format generator allows you to interactively create and modify formatted screen displays. You lay out the format at the workstation and specify information concerning each field of the format. To use the screen format generator, you first enter the RV command with the job name SFGEN:

```
RVΔSFGEN
```

When the system has processed your command, the screen clears and the following display appears on the screen:

```
1.       FUNCTION (1):     1 CREATE  2 CREATE-FROM  3 MODIFY  4 DELETE
2.                         5 SHOW    6 LIST         7 SPOOL   8 TERMINATE
3.       OLD FORMAT NAME (_______) IS ON THE FOLLOWING LIBRARY:
4.       FILE NAME:  ($Y$FMT                      ) VOLUME:  (RES     )
5.
6.       NEW FORMAT NAME (_______) IS TO BE STORED ON THE FOLLOWING LIBRARY:
7.       FILE NAME:  ($Y$FMT                               ) VOLUME: (RES     )
8.       IF THIS FILE DOES NOT EXIST, ALLOCATE (002) CYLINDERS. INCREMENT IS (01) CYL.
9.
10.      **FUNCTION KEYS ARE:F1-GO TO HOME SCREEN, F5-BREAKPOINT SPOOL FILE,
11.                        F13-HELP,F14-EXIT HELP, F20-RESTORE SCREEN
```

This screen is called the home screen. It's always the first display presented when you activate the screen format generator. On it, you choose a function and indicate either where an old format resides or where a format you're creating will ultimately reside. If necessary, you can allocate file space for newly created formats. Once you complete the home screen, the next screen presented is the characteristics screen:

```
1.        GLOBAL CHARACTERISTICS FOR FORMAT format-name: *
2.        LOWER CASE TRANSLATION?  (1)   1 YES   2 NO
3.        ALPHABET:  (ENGLISH) SCREEN FORMAT IS (1):  1 ORIGINAL  2 OVERLAY
4.        ERASE/UNLOCK OPTION (1):  1 NONE  2 REPLENISH SCREEN 3 ERASE SCREEN
5.        4 UNLOCK KEYBOARD  5 CONDITIONAL INDICATOR IN USER PROGRAM
6.        ERROR RETRY COUNT:  (2)  SPECIAL EDITING CHARACTERS? (1):  1 NO  2 YES
7.        SPECIAL DISPLAY CONTROL? (1): 1 NO  2 YES
8.        DO YOU WISH TO SPECIFY AN ERROR MESSAGE FIELD? (1):  1 NO  2 YES
9.        DISPLAY RETENTION FOR ALL FIELDS? (1)  1 NO  2 YES
10.       FUNCTION OR COMMAND KEYS TO BE DEFINED? (1):  1 NO  2 YES
11.       DOES THIS FORMAT HAVE A NON-DISPLAYED CONSTANT? (1):  1 NO  2 YES
```

On this screen, you provide general information about how your format will look and act. Certain selections, in turn, cause other screens, called optional screens, to appear. For example, if you entered (2) for SPECIAL EDITING CHARACTERS, the following display will result after you transmit the characteristics screen:

```
ENTER EDIT CHARACTERS IN PARENTHESES FOR THE FOLLOWING SYMBOLS
                $ : CURRENCY SIGN    = ($)
                . : DECIMAL POINT    = (.)
                , : COMMA            = (,)
                * : REPLACEMENT CHAR = (*)
                CR: CREDIT           = (CR)
                DB: DEBIT            = (DB)
                - : REPLENISH CHAR   = (-)
NOTE: MAKE SURE NO SYMBOL IS AMBIGUOUS WITH ANY VALID PICTURE STRING
CHARACTER.
```

After you have supplied all the information requested by the characteristics screen and by any optional screens that were displayed, you are presented with a blank screen. This is the template screen, on which you actually lay out the format you want to create. The following is an example of a screen format after the first template screen:

```
                         PERSONAL CREDIT REPORT

NAME:____________________________________            __/__/79
ADDR:____________________________________
SOCIAL SECURITY:__________            STATE:____  ZIP:__________
ACCOUNT NUMBER: __________
PAST DUE AMOUNT:__________
NEW BALANCE:_________         PAYMENT DUE DATA: __/__/__
```

The screen format you have laid out is presented to you two more times to allow you to specify further information about each field within the format. If the screen format generator requires more information about a particular field one or more dialog screens are presented, requesting further information. The following is an example of a dialog screen for the "social security" field of this screen format:

```
SOCIAL SECURITY:  999!99!9999
(FLD00007) IS FOR FIELD USE OF (1):  1 OUTPUT  2 INPUT  3 BOTH
INTERNAL USAGE IS (1):  1 DISPLAY  2 PACKED  3 BINARY  6 ZONED
INTERNAL LENGTH IS (08)
PLEASE INDICATE WHETHER THE FOLLOWING ARE REQUIRED:  1 NO  2 YES
   CONDITIONAL DISPLAY (1)         SPECIAL DISPLAY PROPERTIES  (1)
   CONDITIONAL RETENTION (1)       CONDITIONAL PROTECTION      (1)
                                   RANGE CHECKING              (1)
REPLACE  !'s IN THE FOLLOWING LINE BY INSERTION CHARACTERS
999!99!9999
```

When you have finished creating the screen format, it is automatically stored in either a file maintained by the screen format generator ($Y$FMT) or an alternate file that you specified on the home screen.

If, while you are creating a screen format, you come to a step you do not understand, you can receive help in the form of screen displays describing each step of the format generation process.

To receive the appropriate HELP screen for the step in which you are working, press the FUNCTION key and, while holding it down, press the key marked F13 or its functional equivalent. When you have finished studying the HELP screen and you want to go back to the step on which you were working, press the FUNCTION key and F14 or its functional equivalent.

4.1.2. The Screen Format Coordinator

The screen format coordinator retrieves screens you want to use in a program from the $Y$FMT file or alternate file and manages their use in the program. To use a screen format in one of your programs, you must indicate in the program at what point the format is to be used and include a special statement in the job control stream of your program, alerting the system that you require screen format services in the program. Following is the job control statement to use screen formats in your program:

```
                    ┌                                                ┐
//[symbol] USE SFS  │, ⎧[format-file-lfd-1]/[format-file-lfd-2]⎫      │[,initial-screen]
                    │  ⎨$Y$FMT                                  ⎬      │
                    │  ⎩format-file-lfd                         ⎭      │
                    └                                                ┘
  ┌          ┐
  │, ⎧nnn⎫   │[,screen-format-1=alias-1,...,screen-format-12=alias-12]
  │  ⎩1  ⎭   │
  └          ┘
```

Parameters

```
┌                                                ┐
│, ⎧[format-file-lfd-1]/[format-file-lfd-2]⎫     │
│  ⎨$Y$FMT                                  ⎬     │
│  ⎩format-file-lfd                         ⎭     │
└                                                ┘
```

Specifies the names for up to two screen format files. If you omit a format-file-lfd name, it is assumed that all screen formats used reside in $Y$FMT.

`initial-screen`

Specifies the first format name to be used in behalf of the user program. Use of this parameter depends on the program's language.

```
{nnn}
{1  }
```

Specifies the number of formats that are to reside in main storage for use with a given file. You use this parameter if a job alternates between two or more formats. Including this parameter reduces I/O activity needed to retrieve the format. The default value is 1.

```
[,screen-format-1=alias-1...[,screen-format-12=alias-12]]
```

Specifies that a name other than the real format name is to be used to identify a format. You may include a maximum of 12 aliases. If you supply more than 12 aliases, your job control stream will be rejected. Write each alias into the statement as follows:

Real Format Name=Program Format Name

Note: *For complete information on the use of the screen format generator and screen format coordinator, refer to the* Screen Format Services Technical Overview, *UP-9977.*

4.2. Menu Services

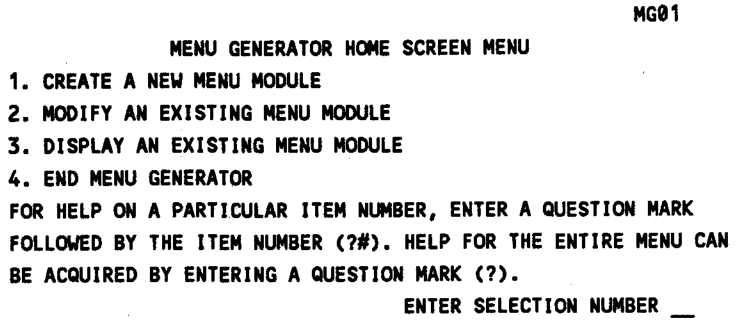
Menu services allow you to create and manage menus for use either with the MENU command or with a user program. There are two components in menu services: the menu generator and the menu processor.

4.2.1. The Menu Generator

The menu generator allows you to create your own menus interactively. You use it to create new menus and modify or display existing menus. A menu generator session begins when you enter the MENUGEN command:

```
MENUGEN
```

You then see this screen:



```
                                                      MG01
              MENU GENERATOR HOME SCREEN MENU
1. CREATE A NEW MENU MODULE
2. MODIFY AN EXISTING MENU MODULE
3. DISPLAY AN EXISTING MENU MODULE
4. END MENU GENERATOR
FOR HELP ON A PARTICULAR ITEM NUMBER, ENTER A QUESTION MARK
FOLLOWED BY THE ITEM NUMBER (?#). HELP FOR THE ENTIRE MENU CAN
BE ACQUIRED BY ENTERING A QUESTION MARK (?).
                                  ENTER SELECTION NUMBER __
```

If, for example, you want to create a menu, choose 1. The menu generator then leads you by means of menus and screens through these steps:

1. You identify the menu you're creating. If, for instance, you are creating a menu named PAYMENU for use in system mode, you'd later call it with this command:

   ```
   MENU PAYMENU
   ```

2. You tell the system in what file you wish to store the completed menu. In this example, you stored the menu named PAYMENU in $Y$FMT in SYSRES.

3. You create the screen that appears when you call the menu.

4. You create the action table which tells, for each item in the menu, what action the system takes, such as running a program or leaving the menu.

5. You create the help screens that go along with the menu.

At this point in the session, you can modify menu PAYMENU, go on to create other menus, or end the session. The menu is then ready for use.

4.2.2. The Menu Processor

In terms of menu services, the menu processor is the partner of the menu generator. As important as the menu generator is to creating a menu, the menu processor plays an equally important role by actually executing the menu. Every time you call a menu, whether by the MENU command or from a user program, it is the menu processor that searches for the menu, displays it on your workstation screen, accepts your choice, and tells the system what action to take in response to your choice. In addition, it retrieves and displays whatever help screen you may want.

You call the menu processor automatically when you enter a MENU command in system mode. If the menu is to be linked to a user program, however, some job control statements are necessary, most importantly the USE statement:

```
                     ┌   ┌                                 ┐ ┐
//[symbol] USE MENU  │ , │ menu-file-LFD-1/menu-file-LFD-2 │ │
                     │   │ $Y$FMT/menu-file-LFD-2          │ │
                     │   │ menu-file-LFD-1/$Y$FMT          │ │
                     │   │ menu-file-LFD-1                 │ │
                     │   │ $Y$FMT                          │ │
                     └   └                                 ┘ ┘

                   ┌   ┌     ┐ ┐
[,initial-menu]    │ , │ nnn │ │ [,menu-1=alias-1,...,menu-12=alias-12]
                   │   │ 1   │ │
                   └   └     ┘ ┘
```

where:

`MENU`

Indicates that the program is to use a menu.

```
┌                                 ┐
│ menu-file-LFD-1/menu-file-LFD-2 │
│ $Y$FMT/menu-file-LFD-2          │
│ menu-file-LFD-1/$Y$FMT          │
│ menu-file-LFD-1                 │
│ $Y$FMT                          │
└                                 ┘
```

Names up to two files to be searched for menus. Any name you use must match an LFD name specified in a previously defined device assignment set for a menu library file (always a MIRAM file). A menu-file-LFD is one to eight alphanumeric characters long. If you don't specify anything for this parameter, it is assumed that all menus reside in system format file $Y$FMT. When coding this parameter, remember the following:

- If you omit $Y$FMT from $Y$FMT/menu-file-LFD, then code ,/menu-file-LFD.

- If you omit $Y$FMT from menu-file-LFD/$Y$FMT, then code menu-file-LFD/.

`initial-menu`

Specifies the name of the first or only menu to be used by the program. Because user programs do not themselves specify which menu is to be called to satisfy an input request, it falls to this parameter to specify the menu.

`nnn`

Specifies the number of menus to be resident in main storage at one time, in the range 1 to 255. The default value is 1.

`menu-n=alias-n`

Allows you to equate a menu name specified in an application program (alias) to a menu with a different menu name (given when the menu was created). A maximum of 12 alias name sets may be specified. The menu and alias names must each be from one to eight alphanumeric characters in length.

Note: *For complete information on creating and using menus, see the* Menu Services Technical Overview, *UP-9317.*

4.3. The OS/3 Interactive Data Utilities

The OS/3 interactive data utilities enable you to interactively maintain the data files of your system. Through the data utilities, you can edit files, transfer files between peripherals, and compare files. Data utilities offer you the following functions:

- Reblocking files
- Correcting fields within a record
- Rearranging fields within a record
- Editing files while transferring them between peripherals
- Filing transfers between peripherals without editing
- Comparing files, with printouts of comparison disagreements

The correction function provides the following correction options:

- Selecting records for output
- Deleting records
- Inserting records
- Replacing records

4.3.1. Initializing the Interactive Data Utilities

The interactive data utilities are run as a user program, occupying a job slot. To initiate the data utilities, you must enter the RV command with the following parameters:

```
RVΔI@DATA[(new-name)][,,MEM=nnnnn][,ACT=acct-no][,DBG= {Y}]
                                                       {N}
```

Parameters

```
I@DATA
```

Is the job name that runs the interactive data utilities.

```
(new-name)
```

Allows you to specify another job name for the interactive data utilities. Each job name must be unique. If a new-name is not specified, the RV command will append a 2-digit number to the end of I@DATA to make the name unique. This permits more than one user to run interactive data utilities concurrently.

```
MEM=nnnnn
```

Specifies, in hexadecimal notation, the amount of main storage required for the data utilities function you wish to run. The default value is 8000^{16}, (32,767^{10}). The default value is adequate for many of the data utilities functions, but certain functions, chiefly those involving disk or tape files, could require more. There is a formula you may apply to calculate the amount of main storage you need for each of the data utilities functions. You can find the formula in the OS/3 *Data Utilities Operating Guide*, UP-8834. If the amount of main storage you specify or the default value is insufficient for the function you wish to perform, the amount required for the function is displayed on the screen, and the data utilities terminates. You must then reinitialize data utilities and enter the correct amount of main storage.

```
ACT=acct-no
```

Specifies a 1- to 4-character alphanumeric account number.

```
DBG={Y}
    {N}
```

Specifies that the data utilities run in the debugging mode. This is used chiefly to provide documentation for software user reports (SURs).

4.3.2. Using the Interactive Data Utilities

The data utilities operate interactively by presenting you with a series of menu selection screens. These screens enable you to enter the information needed by the data utilities function you wish to perform. When you enter the RUN/RV command to initialize the data utilities, your workstation screen will clear, and the first menu selection screen will be displayed. The first screen asks you what you want to do:

```
SCREEN1            DUS01
DO YOU WISH TO
1. COPY OR PRINT A FILE
2. COMPARE TWO FILES
3. CONVERT OS/4 FILES TO OS/3 DISK FILES
4. CONVERT A S/32-34 $ COPY DISKETTE
5. HELP
ENTER (1 THRU 5)  1
```

On the ENTER line, the numeral 1 occupies the space in which you enter your choice of 1, 2, 3, 4, or 5. The default value is 1 on this first screen. If you wish to specify 2, 3, or 4, you simply overwrite the 1. To send your choice to the data utilities program, press the transmit key.

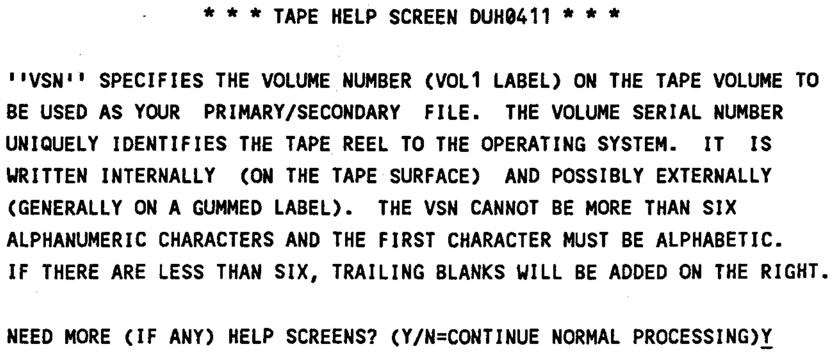
The next screen displayed to you will be determined by your response to the first screen. In this way, the data utilities lead you through the preparation of the information needed to execute a particular function. If you let the default value, 1, on the first screen stand, choosing to copy or print a file, the next screen displayed would ask you to:

```
INPUT SCREEN          DUS02
PLEASE ENTER THE TYPE OF YOUR PRIMARY
FILE:
1. CARD
2. TAPE
3. DISKETTE
4. DISK
ENTER  (1 THRU 4)  1
```

The data utilities continue to direct you, through the menu selection screens, until you have entered all the information needed to perform the function you have selected. The data utilities then inform you that the session is finished and the function you selected is being executed.

4.3.3. The HELP Function

As you probably noticed on the first menu selection screen, there was a third choice for entry, termed HELP. This option is available to you on many of the menu selection screens throughout the interactive data utilities. If you choose the HELP option, a display will appear on the screen, explaining the terms used in the menu selection screen and the other choices available to you. The HELP screens can help you when you reach a point, while entering information, when you do not understand the choices offered you. The HELP screens can also act as a quick refresher for a section of the data utilities with which you are not completely comfortable. The following is an example of a HELP screen:



```
                  * * * TAPE HELP SCREEN DUH0411 * * *

''VSN'' SPECIFIES THE VOLUME NUMBER (VOL1 LABEL) ON THE TAPE VOLUME TO
BE USED AS YOUR  PRIMARY/SECONDARY  FILE.  THE VOLUME SERIAL NUMBER
UNIQUELY IDENTIFIES THE TAPE REEL TO THE OPERATING SYSTEM.  IT  IS
WRITTEN INTERNALLY  (ON THE TAPE SURFACE)  AND POSSIBLY EXTERNALLY
(GENERALLY ON A GUMMED LABEL).  THE VSN CANNOT BE MORE THAN SIX
ALPHANUMERIC CHARACTERS AND THE FIRST CHARACTER MUST BE ALPHABETIC.
IF THERE ARE LESS THAN SIX, TRAILING BLANKS WILL BE ADDED ON THE RIGHT.

NEED MORE (IF ANY) HELP SCREENS? (Y/N=CONTINUE NORMAL PROCESSING)Y
```

Notice that this screen is TAPE HELP SCREEN DUH0411. Choosing the HELP option on the menu selection screen to which this HELP screen is coordinated gets you actually three HELP screens, each adding to the explanation of the choice on the menu selection screen. To view the next screen, simply press the XMIT key. On the line that asks NEED MORE (IF ANY) HELP SCREENS?, the character Y, which causes the next HELP screen to appear, is the default value. When you have seen the last of each series of HELP screens, enter either Y or N and press the XMIT key to return to the menu selection screen.

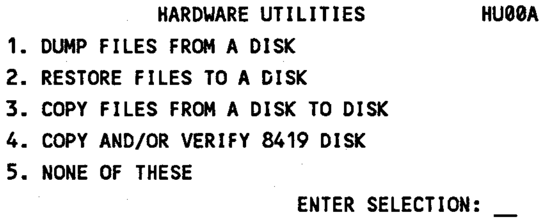
Note: *This explanation of the OS/3 data utilities is presented to get you started in using the data utilities interactively or to act as a reminder of the process of their execution. For the information you need to make more extensive use of the data utilities, refer to the OS/3 Data Utilities Operating Guide*, UP-8834.

4.4. The Interactive DUMP/RESTORE Hardware Utility (HU)

The dump/restore hardware utility (HU) enables you to interactively initiate and control the DMPRST routine from your workstation. The DMPRST routine creates backup copies of your program and data libraries on disk, tape (including streaming tape), or diskette. To initiate the DMPRST hardware utility, key in the following command:

```
HU
```

There are no parameters associated with this command. Once the system accepts your command, the first in a series of screens appears at your workstation. This first screen is a menu where you select the function you want to perform:



```
                 HARDWARE UTILITIES          HU00A
1. DUMP FILES FROM A DISK
2. RESTORE FILES TO A DISK
3. COPY FILES FROM A DISK TO DISK
4. COPY AND/OR VERIFY 8419 DISK
5. NONE OF THESE
                              ENTER SELECTION: __
```

Depending on which number you select, an appropriate set of screens is displayed. You simply enter the requested information on each screen and DMPRST does the rest.

You can request help with any screen by pressing function key 13. If the help you need extends over more than one screen, press the XMIT key to display the next screen. When the last help screen is displayed, press function key 14 or the XMIT key to return to your current screen.

For detailed information on the operation and use of the HU facility, refer to the *System Service Programs (SSP) Operating Guide*, UP-8841.

4.5. The General Editor

The general editor allows you to interactively edit data and library files, as well as edit and write source programs. To initialize the general editor, you enter the following command from the workstation:

```
EDTΔ[initial command]
```

When the system has processed your command, it clears the workstation screen and displays the message EDITOR VERSION XX.X READY on the bottom of the screen. In addition, it sets the current work-space line to 1.0000 and displays a start-of-entry symbol (▸) to accept EDT commands. If you entered an editor command with the EDT command, the editor will process that command, and then display the appropriate line number based on the action of that command. Table 4-1 lists the commands available through the general editor, their formats, and brief descriptions of their functions.

Table 4-1. General Editor Commands

Command	Format	Explanation
	EDT Commands	
@	@{line-number [increment]} [:{data }] {+} [{command}] {-}	Sets the current line number and increment for data and command lines keyed in at the workstation
CHANGE	@C ['search-string'[*n]] TO 'change-string'[*n]	Replaces an existing string in the current work-space file with a new string
COPY	@CO [line-range]['search-string'[*n]] TO destination	Copies lines in the current work-space file to new line locations without deleting the original lines
DELETE	@D [line-range]['search-string'[*n]]	Erases specified lines from the current work-space file
FIND	@FIN 'search-string'[*n]	Locates the first occurrence of a string in the work-space file and assigns its corresponding line number to the variable ? and the column numbers of the first and last columns it occupies to [and] respectively
FSTATUS	To specify file parameters for any file for which you want a list of modules, use this format: @FS[MODULE=module-name] [,TYPE={module-type}] {[redacted]} ,FILENAME={filename}[,RDPASS=password] {'filename'} {"filename"} ,VSN=volume [,DEVICE={did}] {[redacted]}	Creates in the work-space file a list of all modules contained in a specified program library

continued

Table 4-1. General Editor Commands (cont.)

Command	Format	Explanation
	EDT Commands (cont)	
INSERT	@I 'change-string'[*n]	Inserts a specified string into lines in the current work-space file
LIST	@L [line-range]['search-string'[*n]][IMMEDIATE]	Prints specified lines from the current work-space file on the printer
MOVE	@M [line-range]['search-string'[*n]] TO destination	Transfers specified lines to new line locations in the work-space file and deletes the original lines and line numbers
NUMBER	@NU 'sequence-string'[*n] [BY increment]	Inserts sequence numbers into input lines
PRINT	@P [line-range]['search-string'[*n]]	Displays specified lines from the current work-space file on the workstation screen
PUNCH	@PU [line-range]['search-string'[*n]][IMMEDIATE]	Reproduces specified lines from the current work-space file on cards
READ	To read a SAT or MIRAM library module from disk or format label diskette to the current work-space file, use this format: @READ MODULE=module-name [,TYPE={module-type / [illegible]}] [,TRUNC={YES / NO}],FILENAME={filename / 'filename' / "filename"} [,RDPASS=password],VSN=volume [,DEVICE={did / DISK / DISKETTE}] Δ[{KEY=start-col-no:end-col-no / KKEY=start-col-no:end-col-no / SHOWΔfirst-col-no:last-col-no}] To read a MIRAM data file from disk or format label diskette to the current work-space file, use this format: @READ FILENAME={filename / 'filename' / "filename"}[,RDPASS=password] ,VSN=volume [,KEYNO={n / [illegible]}] [,DEVICE={did / DISK / DISKETTE}] [,BFSZ=n] [,TRUNC={YES / NO}]	Reads a copy of a library module or program library into the work-space file

continued

Table 4-1. General Editor Commands (cont.)

Command	Format	Explanation
EDT Commands (cont)		
READ (cont)	Δ[{KEY=start-col-no:end-col-no KKEY=start-col-no:end-col-no SHOWΔfirst-col-no:last-col-no}] To read a unit record file from a data set label diskette or from the card reader, use this format: @READ FILENAME={filename 'filename' "filename"},VSN=volume ,DEVICE={did DISKETTE RDR}[,TRUNC={YES NO}] Δ[{KEY=start-col-no:end-col-no KKEY=start-col-no:end-col-no SHOWΔfirst-col-no:last-col-no}] To read a file from a tape, use this format: @READ FILENAME={filename 'filename' "filename"}[,RDPASS=password] ,VSN=volume,DEVICE={did TAPE}[,BKNO={YES NO}] [,TRUNC={YES NO}]Δ[{KEY=start-col-no:end-col-no KKEY=start-col-no:end-col-no SHOWΔfirst-col-no:last-col-no}] To read a file from the spool file to the current work-space file, use this format: @READ [JOB=jobname][,HOLD={L N Y}] [,FILENAME={filename 'filename' "filename"}][,ACCT=acct-no] ,QUEUE={LOG PRINT PUNCH RDR}[,ALL={YES [illegible]}][,SKIP={n [illegible]}] [,TRUNC={YES [illegible]}]Δ[{KEY=start-col-no:end-col-no KKEY=start-col-no:end-col-no SHOWΔfirst-col-no:last-col-no}] To read the same module or file last accessed through a previous @READ or @WRITE command, use this format. @READ	

continued

Table 4-1. General Editor Commands (cont.)

Command	Format	Explanation
EDT Commands (cont)		
READ (cont)	To read the same module or file last accessed through a previous @READ or @WRITE command but read now with a KEY, KKEY, or SHOW parameter or any valid EDT command specified, use this format: @READ∆;∆[{KEY=start-col-no:end-col-no KKEY=start-col-no:end-col-no SHOW∆first-col-no:last-col-no}] [valid EDT command]	
REMOVE	@REM 'search-string'[*n]	Deletes a specified string from lines in the work-space file
SEQUENCE	@SEQ {'sequence-string'[*n] *} BY increment	Inserts sequence numbers into existing lines in the current work-space file
UPDATE	@U [line-range]['search-string'[*n]]	Displays specified lines from the work-space file one at a time for you to edit or change
WRITE	To write the current work-space file to a SAT or MIRAM library module on a disk or format label diskette, use this format: @WRITE MODULE=module-name [,TYPE={module-type S}] ,FILENAME={filename 'filename' "filename"} [,WRPASS=password] [,DEVICE={did DISK DISKETTE}] ,VSN=volume [,CONTIG={YES NO}] [,INC={n 1}] [,RCSZ=n] [,SIZE=n] [,SAT={YES NO}] To write the current work-space file to a MIRAM data file on a disk or format label diskette, use this format: @WRITE FILENAME={filename 'filename' "filename"} [,WRPASS=password] ,VSN=volume [,CONTIG={YES NO}] [,DEVICE={did DISK DISKETTE}] [,INC={n 1}] [,INIT={YES NO}] [,EXTEND={YES NO}]	Writes a copy of the current work-space file to: a program library or data file on disk, diskette, or tape, or to the spool file

continued

Table 4-1. General Editor Commands (cont.)

Command	Format	Explanation
	EDT Commands (cont)	

WRITE
(cont)
	[,KEYi={start-col-no:end-col-no
	{(start-col-no:end-col-no,{DUP },{CHG })}]
	{NODUP} {NOCHG}
	,SIZE=n [,RCB={YES}] [,RCFM={FIX}] ,RCSZ=n
	{NO } {VAR}
	[,SCSZ={n }] [,BFSZ=n]
	{256}
	To write the current work-space file to a unit record file (i.e., to the printer, card punch, or to a data set label diskette), use this format
	@WRITE FILENAME={filename },VSN=volume
	{'filename'}
	{"filename"}
	,DEVICE={did } [,RCFM={FIX}] [,RCSZ=n]
	{DISKETTE} {VAR}
	{PRINT}
	{PUNCH}
	To write the current work-space file to a tape, use this format.
	@WRITE FILENAME={filename } [,WRPASS=password]
	{'filename'}
	{"filename"}
	,VSN=volume,DEVICE={did } [,BFSZ=n] [,BKNO={YES}]
	{TAPE} {NO }
	[,RCFM={FIXUNB}] [,RCSZ=n] [,INIT={YES}]
	{FIXBLK} {NO }
	{VARUNB}
	{VARBLK}
	{UNDEF}
	[,EXTEND={YES}]
	{NO }
	To write the current work-space file to the spool file, use this format:
	@WRITE [JOB=jobname] [,HOLD={YES}]
	{NO }
	[,FILENAME={filename }] [,ACCT=acct-no]
	{'filename'}
	{"filename"}
	,QUEUE={PRINT} [,COPIES={n}]
	{PUNCH} {1}
	{RDR}
	To write to the same module or file last accessed through a previous @READ or @WRITE command, use this format:
	@WRITE	

continued

Table 4-1. General Editor Commands (cont.)

Command	Format	Explanation
	EDT Commands (cont)	
WRITE (cont)	To write to the same module or file last accessed through a previous @READ or @WRITE command, but written to now with any valid EDT command specified, use this format: @WRITEΔ;Δvalid EDT command	
	General Editor Variable Commands	
ASSIGN	@AS Gn= { 'string'[*n] n(x:y) n[±m] Gm LEN(n) }	Assigns values to EDT variables
DISPLAY	@DI { 'string'[*n] n(x:y) n[±m] Gm LEN(n) }	Displays a specified expression or the value of a specified expression from the work-space file on the workstation screen
IF	@IF.condition.command or @IF expression relation expression command	Permits an EDT command or EDT procedure file command to be executed based on some condition
	General Editor Procedure File Commands	
DO	@DO proc-number [{ PRINT NOPRINT REVERT }]	Executes a procedure file
END	@E	Terminates procedure file definition
GOTO	@G { label line }	Permits branching within a procedure file
INPUT	@INP file-parameters [{ PRINT NOPRINT REVERT }]	Loads and executes a procedure file
NOP	@NOP [comment]	Enters extra lines for branching or comments into a procedure file
PROC	@PRO [proc-number]	Begins procedure file definition
RETURN	@RET	Terminates procedure file execution
	General Editor Directives	
CHECK	@CHE [{ [redacted] OFF }]	Determines if processed lines are to be displayed on the workstation screen

continued

Table 4-1. General Editor Commands (cont.)

Command	Format	Explanation
General Editor Directives (cont)		
COBOL	@COB	Activates the COBOL editor
DROP	@DR	Deletes all lines in the entire EDT work-space file
EFP	@EFP	Activates the error file processor
FORMAT	@FORMAT parameter string (for RPGEDT) @FORMAT (for COBEDT)	Used only in conjunction with either RPGEDT or COBEDT. See the appropriate subeditor manual for information on the @FORMAT directive.
HALT	@H	Terminates the EDT session
RPG	@RPG	Activates the RPG II editor
SET	@S [CHAR=tab-character,TABS={columns OFF}] [,LINE=length][,EXCLUDE={exclusion-character OFF}] [,ATSIGN=command-trigger][,COLON=range-separator] [,ENCOL=end-column][,BUFFER={record-size OFF}] [,WIDTH=device-size][,CLEAR][,STRIP={ON OFF}] [,DISPLAY] [,SCRDSPLY={TRUNCATE FOLD}] [,ROLL={15(if SCRDSPLY=TRUNCATE) 8(if SCRDSPLY=FOLD) 1-15}] [,MODE={LINE SCREEN}][,LANGUAGE={FREEFORM FORTRAN COBOL RPG}] [,RECENTRY={SINGLE MULT}][,SCRFORM={UNDERLINE BLANK}]	Defines various parameters to EDT that collectively make up your EDT environment
SYSTEM	@SY [workstation-command]	Permits workstation commands to be issued during an EDT session or temporarily returns you to system mode

continued

Table 4-1. General Editor Commands (cont.)

Command	Format	Explanation
EDT Screen Commands		
BLOCK	@BL	Displays a freeform screen that allows you to switch to block mode for entering multiple commands or data
HELP	@HE [error message code]	Displays help screens for any EDT error messages
PARAMS	@PA	Displays a screen showing the parameters on the @SET directive (those that make up your EDT environment)
PROMPT	@PROM [edt command]	Displays the EDT command menu screen or help screens for any of the EDT commands (meaning EDT commands, modifiers, directives, procedure file commands, variables, and screen commands)
RESTORE	@RES	Returns you to the point in your EDT session where you originally entered a screen command
ROLL	@RO	Displays freeform screens, showing the EDT work-space file, where you can update lines or simply view them

4.5.1. The Error File Processor

The error file processor, or EFP, is a subroutine of the general editor. It lets you see errors in your source code immediately after the language compiler has compiled your program. You don't have to wait for the printed listing from the compiler. As you see your errors, you can correct them right at your workstation.

EFP has its own command set. Once it is running, it will display an error message together with the line of source code where the error occurs. You use the EFP commands to control this display. To correct the source code, you use regular EDT commands.

Note: *Before you can use EFP, you must specify an error file in your job control stream. You do this by specifying the / / PARAM ERRFIL= job control statement, the RPG II jprocs, or the auto report jprocs. For details, see the user guide or programmer reference for the language you're using.*

If you're not already using the general editor, you activate EFP by keying in:

```
EDT@EFP
```

If you are already in the general editor, clear the EDT workspace with the @DELETE command and set the current line number and increment equal to 1 with the @ command. Then key in:

```
@EFP
```

Once activated, EFP displays the following message at your workstation:

```
EFP001  VERSION n.n
EFP002  ENTER ERROR-FILE MODULE-NAME,FILE-NAME,VSN
▶
```

The cursor is positioned on the line below the EFP002 message. There you enter the module name, file name, and volume serial number of your error file. Once you transmit this information, the next screen display is:

```
EFP003  ERROR FILE=error-module-name,error-filename,vsn
language-compiler,compiler-version,compilation-date,compilation-time
EFP004  SOURCE FILE=source-module-name,source-filename,vsn
EFP005  MODULE=source-module-name                     nnnn ERRORS
                    or
                program-unit-names (for FORTRAN users only)
```

Lines 1 through 3 show you your error file library, information about your compilation, and your source file library. Line 4 shows you the total count of compilation errors.

At this point, you can begin displaying each error message and related line of source code by issuing an EFP command.

Table 4-2 lists the EFP commands and their functions.

Table 4-2. Error File Processor (EFP) Commands

Command	Format	Explanation
EFP	@EF[X]△[program-unit-name] △ [error-range] △ ['search-string]	Displays error messages along with the line of source code where the error occurs
	where:	
	X	Specifies that any message and line of source code that is displayed once will not be displayed again during the current EFP session
	program-unit-name	(Applies only to FORTRAN IV source modules containing multiple program units) Lets you see and correct errors for one program unit within your source module
	error-range	Specifies the error. message numbers you wish to see. They can be a range of numbers, or specific numbers.
	search-string	Specifies specific types of error messages you wish to see. You can specify up to 50 characters.
	@EFP SOU source-module-name, source-file-name,vsn	To correct and display FORTRAN IV errors for compilations that process multiple source modules
	where:	
	source-module-name,source-file-name, and vsn	Refer to the library where a specific source module that you want to correct is in your FORTRAN IV compilation.
END	@EF END	Terminates EFP
SUMMARY	@EF SUM	Displays a summary of your error file

The following screens illustrate a typical EFP session.

```
EDT@EFP
```

You activate EDT and issue the EFP directive.

```
EFP001 VERSION 8.0
EFP002 ENTER ERROR-FILE MODULE-NAME,FILE-NAME,VSN
▶ ERRMOD,MYERRFIL,RES
```

EFP asks you for and you provide the name of your error file and where it resides.

```
EFP003 ERROR-FILE=ERRMOD,MYERRFIL,RES
COBOL74,VERSION 8.00/xx,81/09/04,10:27:04
EFP004 SOURCE FILE=PAYROLL,MYFILE,MYVOL1
EFP005 PAYROLL                                      10 ERRORS
```

EFP displays your error file's name and location, the name and location of your source file, information about your compilation, and the number of compilation errors.

```
101.0000 ▶@EFP
```

You issue an EFP command to begin display of your error messages and their related source code. (101.0000 is the next EDT line number because the source code for PAYROLL occupies the first 100 lines of the EDT workspace.)

```
ERR-001 ASSIGN CLAUSE NOT SPECIFIED IN SELECT SENTENCE.
 10.0000  SELECT PAY-REPORT-FILE
102.0000▶@U 10
 10.0000▶SELECT PAY-REPORT FILE ASSIGN TO PRINTER-UNITPR-VC
```

The first error message and the line of source code it refers to are displayed (lines 1 and 2). On line 3, you issue the EDT update command to change line 10 of your source code. On line 4, you make your correction.

4.5.2. The RPG Editor

The RPG editor is a subeditor of EDT. It enables you to interactively create programs in the RPG II programming language. The RPG editor offers three format types to accommodate all levels of programming experience.

To initialize the RPG editor, enter the EDT command with the operand RPG as follows:

```
EDT@RPG
```

When your command is processed, the screen will clear and you will receive the following display:

```
             RPGEDT VER #
SELECT MODE (C)
C = CREATE   U = UPDATE

SELECT FORMAT TYPE:  (1)
 1 = POSITIONAL    2 = FORMATTED    3 = FREE FORM

SPECIFICATION TYPE DISPLAY? (N)  Y = YES  N = NO
```

The three format types are geared to different levels of programming ability. The *formatted* type provides the most prompting and is easiest to use. The following is a formatted-type screen:

```
                                                 LINE - 1.0000
 1 SEQUENCE NUMBER: _____   6 FORM TYPE  H
 7 COMPILATION MODE: _          8 ERROR DUMP: _
 9 OPERATOR CONTROL: _         15 DEBUG: _
21 INVERTED PRINT: _           26 ALTSEQ: _
31 BINARY SEARCH: _            40 SIGN HANDLING: _
41 FORMS ALIGNMENT: _          42 INDICATOR INIT.: _
43 FILE TRANSLATION: _         70 CCA NAME: ____
74 SUBROUTINE: _               75 PROGRAM ID: _____
   NEXT SPECIFICATION TYPE, ST, OR CMD:  (__)
```

The *positional* format type is for more experienced programmers; it offers less prompting and hence requires a more thorough knowledge of RPG II.

The following is an example of a positional format:

```
                                                    LINE - 1.0000

              1 2 2 3 4 4 4 4 7    7 7
1     6 7 8 9 5 1 6 1 0 1 2 3 0    4 5

____ H _ _ _ _ _ _ _ _ _ _ _ ___ _ ____

NEXT SPECIFICATION TYPE, ST, OR CMD:  (___)
```

The third format type, the *free-form* format, offers no prompting and is geared for highly experienced programmers who wish to create programs quickly. The following is an example of the free-form format:

```
                                                    LINE - 1.0000

                  1         2         3         4         5         6
          1234567890123456789012345678901234567890123456789012345678901234


                                             1         1         1
          6    7         8         9         0         1         2
          5678901234567890123456789012345678901234567890123456789012345678

          ENTER ST,  OR CMD:  (___)
```

The procedure for using the RPG editor to create a program is the same for all three format types. The RPG editor displays the forms necessary to create an RPG II program. After you have completed one form, the next will be presented until a complete program is written.

For detailed information on the operation and use of the general editor and the RPG editor, refer to the *General Editor (EDT) Operating Guide*, UP-9976, and the *Report Program Generator II (RPG II) Editor Operations Guide*, UP-9981.

4.5.3. The COBOL Editor (COBEDT)

The COBOL editor, or COBEDT, is a subeditor of the general editor. It allows you to interactively create programs in the COBOL programming language.

The COBOL editor offers you two modes of operation: the ordered creation mode and the selective creation mode. The ordered creation mode is designed for the novice programmer; it prompts you through certain steps in the creation process. The selective creation mode is for the more experienced user, who doesn't need prompting. COBEDT also allows you to use keyword abbreviations, either ones you define and/or ones COBEDT assigns.

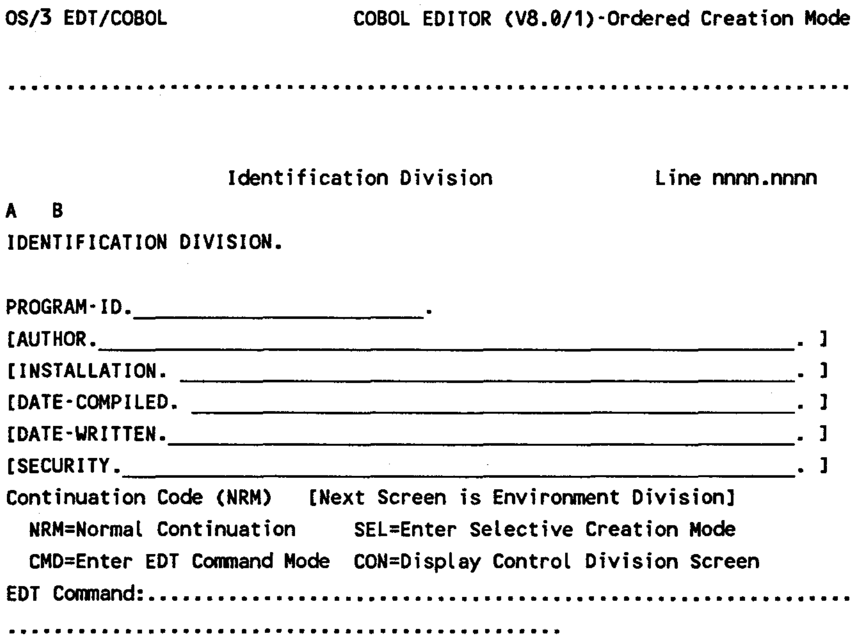
To activate the COBOL editor, enter the EDT directive with the COBOL command as follows:

```
EDT@COBOL
```

The first screen displayed is the option select screen, where you select your mode of operation, specify whether you will use abbreviations, and choose your continuation mode.

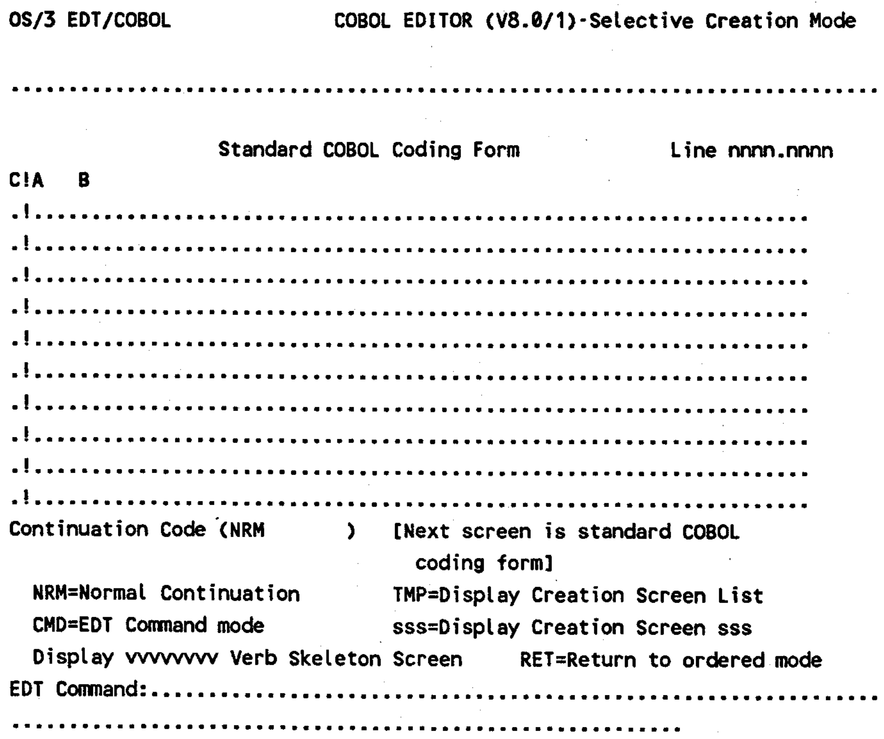
```
OS/3  EDT/COBOL                                      COBOL EDITOR (V8.0/1)

..........................................................................

Select Creation Mode: (2)
  1=Create in COBOL Program Order
  2=Create Selected Portions of the COBOL Program
Abbreviations to be used: (1)
  1=None  2=COBOL keywords  3=user specified  4=Both (COBOL and user)

Display COBOL keyword or abbreviation file abbreviations (1) 1=No 2=Yes

Abbreviation file to be read and/or written (1)
  1=No  2=Read file  3=Write  4=Read and write file
  Enter file name (............................................)
  Enter file vsn (........)
Continuation Code (NRM)
  NRM=Normal continuation    CMD=Enter command mode

EDT Command:.............................................................
.........................................................................
.........................................................................
```

If you choose the ordered creation mode (1), the screen where you enter your source code appears as:



```
OS/3 EDT/COBOL               COBOL EDITOR (V8.0/1)-Ordered Creation Mode

........................................................................


                   Identification Division             Line nnnn.nnnn
A   B
IDENTIFICATION DIVISION.

PROGRAM-ID.________________________.
[AUTHOR.____________________________________________________________. ]
[INSTALLATION. _____________________________________________________. ]
[DATE-COMPILED. ____________________________________________________. ]
[DATE-WRITTEN.______________________________________________________. ]
[SECURITY.__________________________________________________________. ]
Continuation Code (NRM)   [Next Screen is Environment Division]
  NRM=Normal Continuation     SEL=Enter Selective Creation Mode
  CMD=Enter EDT Command Mode  CON=Display Control Division Screen
EDT Command:............................................................
................................................
```

If you choose the selective creation mode (2), the screen appears as:



```
OS/3 EDT/COBOL            COBOL EDITOR (V8.0/1)-Selective Creation Mode

...........................................................................

                  Standard COBOL Coding Form           Line nnnn.nnnn
C!A   B
.!.................................................................
.!.................................................................
.!.................................................................
.!.................................................................
.!.................................................................
.!.................................................................
.!.................................................................
.!.................................................................
.!.................................................................
.!.................................................................
Continuation Code (NRM      )   [Next screen is standard COBOL
                                  coding form]
  NRM=Normal Continuation       TMP=Display Creation Screen List
  CMD=EDT Command mode          sss=Display Creation Screen sss
  Display vvvvvvvv Verb Skeleton Screen     RET=Return to ordered mode
EDT Command:...............................................................
..........................................................
```

As you transmit each line of source code, the COBOL editor checks your syntax and notifies you of any errors. In this way, you can eliminate syntax errors before you compile your program.

For detailed information on the operation and use of the general editor and the COBOL editor, refer to the *General Editor (EDT) Operating Guide*, UP-9976, and the *COBOL Editor (COBEDT) Programming Guide*, UP-9974.

4.6. Distributed Data Processing (DDP)

Distributed data processing (DDP) permits you to form a network of data processing systems in which all systems may, within the limits of proper security, access each other's files and run jobs on each other while directing program output back to the remote system that originated the job.

The distributed data processing functions of OS/3 are initiated by entering the following command:

```
DDPΔcommand
```

To perform the DDP functions, you use a special set of commands, given here in Table 4-3. Each command must be preceded by the DDP directive. For more information on DDP and more detailed information on the DDP commands, refer to the OS/3 *Distributed Data Processing Programming Guide*, UP-8811.

Table 4-3. DDP Commands

Command	Explanation
CREATEΔFILE=[{host-id local-host-id}::]file-id [ΔBLOCK_SIZE={nnnnnnnnn 256}] [ΔDENSITY={200 556 800 1600 6250 host-SYSGEN-option}] [ΔDEVICE_CLASS={DISC TAPE DISKETTE}] [ΔFILE_TYPE={SEQUENTIAL INDEXED LIBRARY [illegible]}]	The CREATE command: ■ Establishes a file on a receiving host ■ Allocates space for the file ■ Catalogs the file in your online system catalog ■ Records the file in the volume table of contents (VTOC) of the volume at the remote host on which the file is created

continued

Table 4-3. DDP Commands (cont.)

Command	Explanation

[△INCREMENT_SIZE={nnnnnnnnn}] [△INITIAL_SIZE={nnnnnnnnn}]
{3 cyls} {3 cyls}
[△KEY[_{n}]=(size,location[△{DUPLICATES}])]
{1} {NO_DUPLICATES}
[△{CHANGE}]
{NO_CHANGE}
[△PARITY={ODD}] [△RECORD_FORM={FIXED}]
{EVEN} {VARIABLE}
{UNDEFINED}
[△RECORD_SIZE={nnnnn}] [△REGISTER={VTOC}]
{256} {CATALOG}
	NOTE:
	The default for INCREMENT SIZE and INITIAL SIZE is three cylinders. If more or less than three cylinders is needed, the size must be entered in number of blocks (nnnnnnnnn).

COPY△FROM=[{source-host-id}::]source-file-id
{local-host-id}
△TO=[{destination-host-id}::]destination-file-id
{local-host-id}
[△ELEMENT_TYPE={SYMBOLIC}]
{RELOCATABLE}
{ABSOLUTE}
{MACRO}
{PROC}
{COMPILED_JOB}
{SCREEN_FORMAT}
[△KEY[_{n}]=(size,location[△{DUPLICATES}])]
{1} {NO_DUPLICATES}
[△{CHANGE}]
{NO_CHANGE}
[△MODE={DIRECT}] [△POSITION={EOF}]
{WAIT} {SOF}
{INDIRECT}
[△TRANSLATE={ASCII}]
{EBCDIC}
{NONE}
	The COPY command permits you to copy a file or module from one system to another. You may copy a file or module from one remote system to another, from your local system to a remote system, or vice versa. You may also use the COPY command to copy a file within your local system.

PURGE△FILE=[{host-id}::]file-id {local-host-id}	The PURGE command allows you to physically remove a file, and all references to it, from a host system.

SUBMIT△FILE=[{source-host-id}::]file-id
{local-host-id}
[△ELEMENT_TYPE={SYMBOLIC}]
{COMPILED_JOB}
[△HOST={destination-host-id}]
{local-host-id}
	The SUBMIT command allows you to send a file of job control strems to a host system for execution. You can also use it to initiate a file of job control streams already at the host system or to bring a job control stream to your local system for execution.

continued

Table 4-3. DDP Commands (cont.)

Command	Explanation
CANCEL△JOB=[{host-id }::] jobname [{local-host-id}] [△OUTPUT={DISCARD}]△COMMAND={host-id } [{DELIVER}] {local-host id} work-order-number	The CANCEL command allows you to terminate a job either executing or scheduled for execution on a host system.
SUBMIT△REQUEST=statement[△HOST={host-id }] [{local-host-id}]	The SUBMIT REQUEST command allows you to send a statement, such as an operator or interactive command, to a host system. However, the following statements (commands) cannot be used: DISPLAY, DELETE, BREAKPOINT, FILE, IN, SU, TU, PD.

STATUS△{COMMAND=work-order-number
FILE=[{HOST-id }::]file-id
[{local-host-id}]
[keyword parameter]
HOST=host-id
JOB= [{host-id }::]jobname
[{local-host-id}]
USER=[{host-id }::]user-id
[{local-host-id}]}
	The STATUS command enables you to obtain information about:
	■ Commands entered
	■ Host systems in your DDP system
	■ Jobs you have submitted
	■ Files in your DDP system
	■ Other users on your DDP system

TALK△MESSAGE='string' △USER=[{host-id }::]{OPERATOR}[△WAIT] [{local-host-id}] {user-id }	The TALK command allows you to send a message to a remote operator or user.

4.7. BASIC

BASIC is a powerful, interactive programming language that you use through your workstation. BASIC programs may be written, executed, and modified from the workstation.

To use BASIC, enter the following command:

```
BASIC
```

There are no parameters associated with this command.

When BASIC is ready for your use, you receive the following message:

```
BA001 OS/3 BASIC READY(VER x.x) BEGIN
```

You may now begin to enter the BASIC statements that comprise your program. Each line is checked for correct syntax as it is entered.

Note: *For more detailed information on programming in BASIC, refer to the OS/3* BASIC Programming Reference Manual, *UP-9168.*

4.8. ESCORT

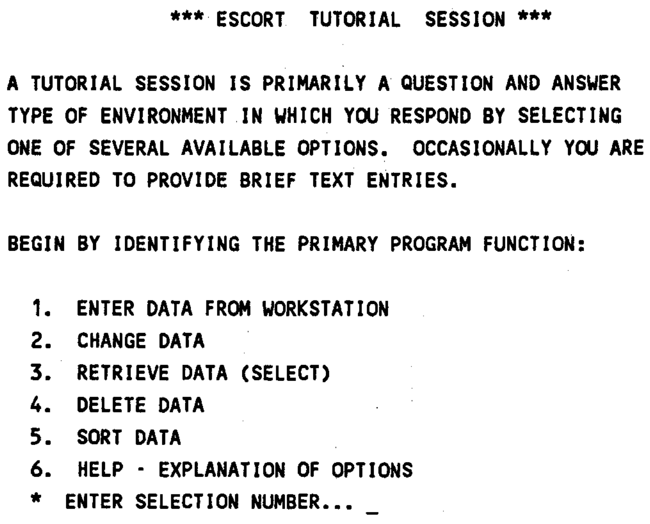
ESCORT is an interactive programming language that uses English statements to create a program. ESCORT allows you to generate reports and perform inquiry and update routines through the use of simple, sentence-like programs, entered through your workstation. To use ESCORT, log on and then enter the following command:

```
ESCORT
```

There are no parameters associated with this command. The following display now appears on your workstation screen:

```
Welcome to an ESCORT to computers
Please select your entry point: _

1. The PROGRAM mode
2. The TUTORIAL mode
3. HELP - a brief description of ESCORT
4. RECOVER
```

For the inexperienced ESCORT user, we recommend the *tutorial* mode of operation, which makes ESCORT easy to learn right at the workstation. The following screen is an example of the ESCORT tutorial displays:



```
                 *** ESCORT  TUTORIAL  SESSION ***

A TUTORIAL SESSION IS PRIMARILY A QUESTION AND ANSWER
TYPE OF ENVIRONMENT IN WHICH YOU RESPOND BY SELECTING
ONE OF SEVERAL AVAILABLE OPTIONS.  OCCASIONALLY YOU ARE
REQUIRED TO PROVIDE BRIEF TEXT ENTRIES.

BEGIN BY IDENTIFYING THE PRIMARY PROGRAM FUNCTION:

  1.  ENTER DATA FROM WORKSTATION
  2.  CHANGE DATA
  3.  RETRIEVE DATA (SELECT)
  4.  DELETE DATA
  5.  SORT DATA
  6.  HELP - EXPLANATION OF OPTIONS
  *  ENTER SELECTION NUMBER... _
```

ESCORT also offers help screens to explain the various statements and conventions it requires. For more detailed information on the use of ESCORT, refer to the *ESCORT Programming Language Programming Guide*, UP-8855.

Appendix A
Interactive Terminals

A.1. General

This appendix contains the specific information you need to use the System 80 workstation, the System 80 console workstation, or the UNISCOPE and UTS 400 terminals as workstations. The different procedures for each terminal are also presented in a table at the end of this appendix.

A.2. The System 80 Workstation

The System 80 workstation keyboard contains data keys and control keys. Data keys are the keys you use to enter alphabetic, numeric, and punctuation characters (the same characters you find on a regular typewriter). Control keys either control keyboard operation or they perform a system function. As you will see, some keys are used both as data keys and as control keys.

Figures A-1 and A-2 show you the 70-character TYPEWRITER keyboard and the 94-character EXPANDED TYPEWRITER keyboard, respectively. Both are available with the System 80 workstation. Table A-1 highlights the most frequently used control keys and describes what each one does. For more information on both keyboards, see the *Local Workstation - System 80 Operator Reference*, UP-8910.

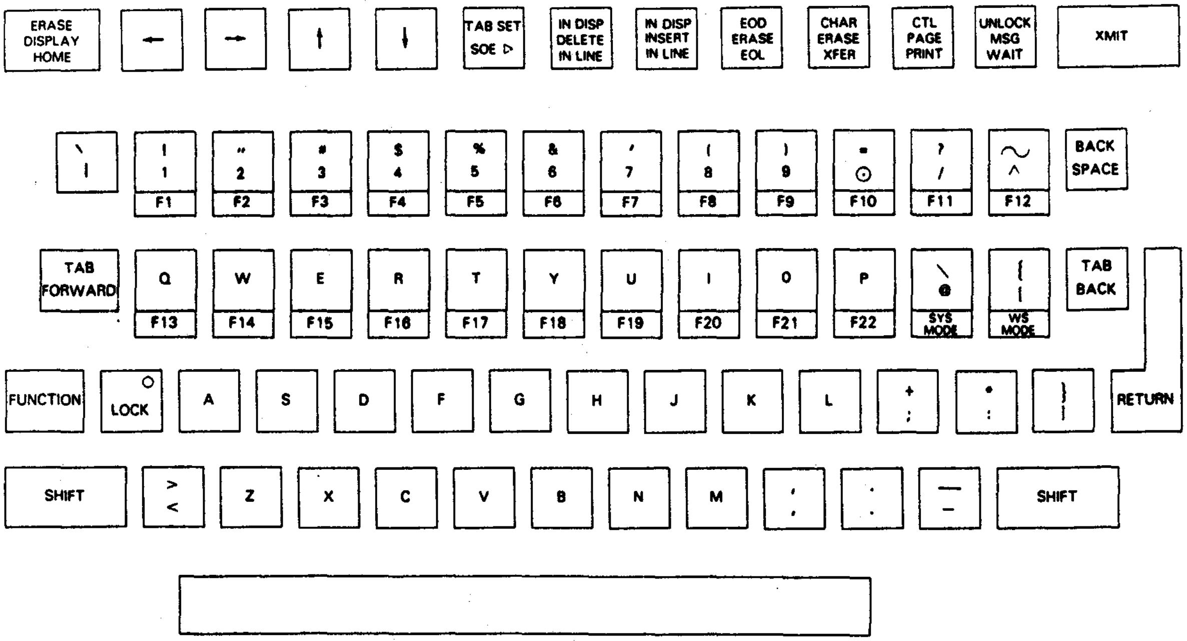


Figure A-1. Workstation TYPEWRITER Keyboard

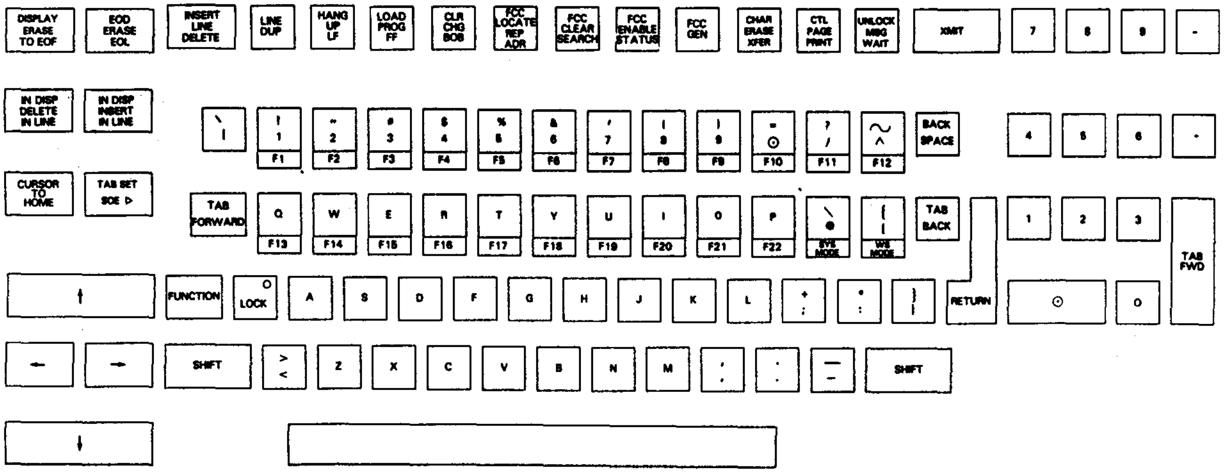
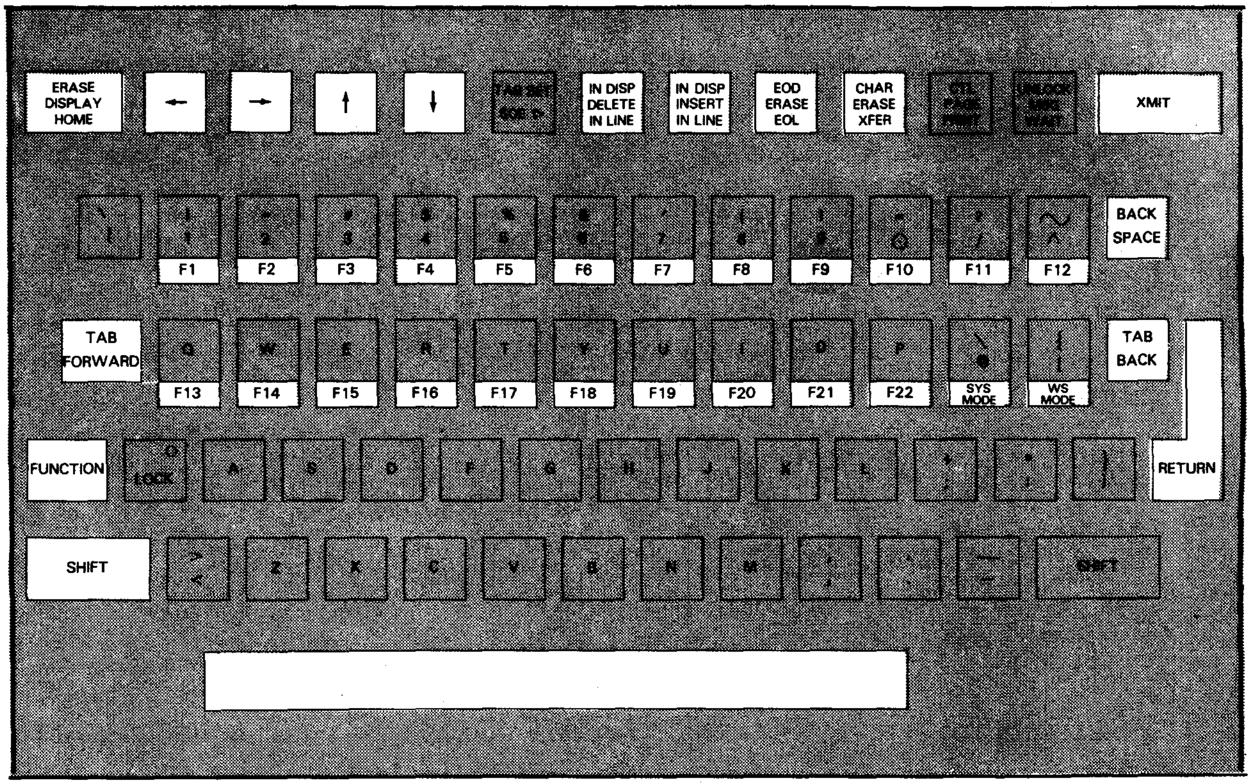


Figure A-2. Workstation EXPANDED TYPEWRITER Keyboard

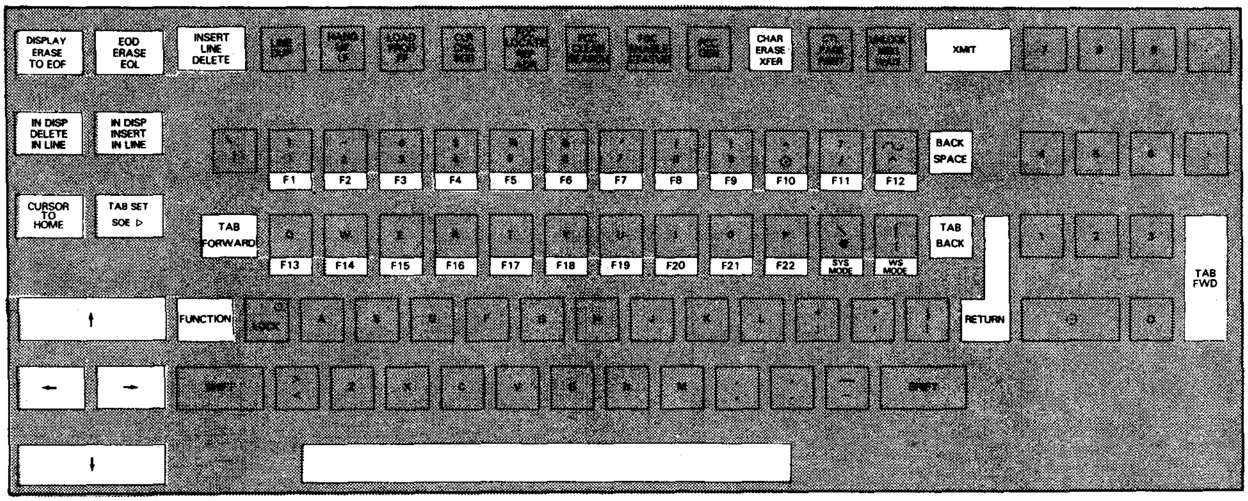
Table A-1. System 80 Workstation Keyboard Functions

Key	Function

TYPEWRITER KEYBOARD



EXPANDED TYPEWRITER KEYBOARD



continued

Table A-1. System 80 Workstation Keyboard Functions (cont.)

Key	Function
	Control Keys that Perform a System Function
XMIT	SENDING DATA TO THE SYSTEM - Pressing the transmit key (XMIT) sends your entry to the system. The entry can be a command, a response, a screen, or any information pertaining to one of the interactive utilities, such as the general editor.
FUNCTION	ACTIVATING THE UPPER OR FRONT-FACE OF A KEY - Certain control keys have dual functions, which are printed on their top, and certain data keys have a control function printed on their front. To activate the upper function of a control key or the front face of a data key, press the FUNCTION key and, while holding it down, press the desired key. (For an example, see the SYS MODE key.)
\ @ SYS MODE + FUNCTION	ENTERING SYSTEM MODE - You may issue interactive commands only in SYSTEM mode. To enter SYSTEM mode, press the FUNCTION key and, while holding it down, press the SYS MODE key.
{ [WS MODE + FUNCTION	ENTERING WORKSTATION MODE - You complete the LOGON menu and fill in data only in WORKSTATION mode. To enter WORKSTATION mode, press the FUNCTION key and, while holding it down, press the WS MODE key.
! 1 F1 ↓ P F22 + FUNCTION	USING FUNCTION KEYS - Function keys perform various system functions, depending on whether you've assigned an interactive command to them (via the DEFKEY command) or whether an interactive utility has assigned a function to them. Appendix E lists the function keys already assigned by the system. To use a function key, press the FUNCTION key and, while holding it down, press the desired function key.

continued

Table A-1. System 80 Workstation Keyboard Functions (cont.)

Key	Function
	Control Keys that Control the Cursor
TAB FORWARD	TAB FORWARD - Pressing the TAB FORWARD key advances the cursor one tab setting.
TAB BACK	TAB BACK - Pressing the TAB BACK key moves the cursor back one tab setting.
▭	SPACE BAR - Pressing the space bar moves the cursor forward one position.
ERASE DISPLAY HOME or CURSOR TO HOME	HOME or CURSOR TO HOME keys - Pressing the HOME key (on the TYPEWRITER keyboard) or the CURSOR TO HOME key (on the EXPANDED TYPEWRITER keyboard) repositions the cursor to the upper left-hand corner of the screen.
→ ← ↑ ↑ ↓ ↓	CURSOR SCAN KEYS Pressing the forward arrow moves the cursor forward one position. If the cursor is at the end of a line, it will move to the beginning of the next line. Pressing the back arrow moves the cursor back one position. If the cursor is at the beginning of a line, it will move to the last character position of the previous line. Pressing the up arrow moves the cursor up one line without changing its horizontal position. Pressing the down arrow moves the cursor down one line without changing its horizontal position. **Note:** Holding down any cursor scan key causes the cursor to move continuously until the key is released.

continued

Table A-1. System 80 Workstation Keyboard Functions (cont.)

Key	Function
	Control Keys that Control the Cursor (cont.)
BACK SPACE	BACK SPACE KEY - Pressing the BACK SPACE key moves the cursor back one position.
RETURN	RETURN KEY - Pressing the RETURN key moves the cursor to the beginning of the next line.
CHAR ERASE XFER + FUNCTION	CHARACTER ERASE KEY - To erase a character (replace it with a blank), place the cursor on the character, press the FUNCTION key and, while holding it down, press the CHAR ERASE key. (You can also set the space bar so that it will erase a character and leave a blank in its place. For details, see the SCREEN command, 3.2.8.)
IN DISP DELETE IN LINE	DELETING A CHARACTER IN A LINE - To delete a character in a line, place the cursor on the character to be deleted and press the DELETE IN LINE key. All characters on the same line to the right of the deleted character are moved left one position.
IN DISP INSERT IN LINE	INSERTING A CHARACTER IN A LINE - To insert a character in a line, place the cursor on the character position immediately following the point of insertion. Press the INSERT IN LINE key. This moves all subsequent characters on the same line right one position. Press the key for the character you're inserting.
EOD ERASE EOL	ERASING CHARACTERS TO THE END OF A LINE - Pressing the erase-to-the-end-of-line key, ERASE EOL, erases all the characters you entered from the cursor position to the end of the line or the end of the field, whichever occurs first. If you are using a screen display that contains protected characters, the protected characters remain intact.
INSERT LINE DELETE (EXPANDED TYPEWRITER KEYBOARD ONLY)	DELETING A LINE - On the EXPANDED TYPEWRITER keyboard, pressing the DELETE LINE key removes the line in which the cursor is located. All lines following the deleted line are moved up one line, and a blank line is inserted at the bottom of the screen. The cursor remains in the same position after the DELETE LINE key is pressed.

continued

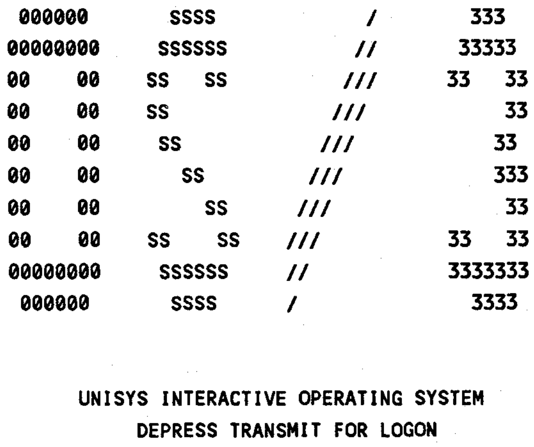
Table A-1. System 80 Workstation Keyboard Functions (cont.)

Key	Function
Control Keys that Control the Cursor (cont.)	
INSERT LINE DELETE + FUNCTION (EXPANDED TYPE-WRITER ONLY)	INSERTING A LINE - On the EXPANDED TYPEWRITER keyboard, pressing the FUNCTION key and, while holding it down, pressing the INSERT LINE key, inserts a blank line in front of the line where the cursor is located. All lines below the inserted blank line are moved down one line. The cursor remains in the same position as before the INSERT LINE key was pressed.

Note: *The CTL PAGE and UNLOCK key functions present on the System 80 workstation keyboard are not necessary to the normal functioning of the workstation. Pressing these keys while commands or programs are being executed could cause unpredictable results.*

A.2.1. LOGON Procedure

After applying power to the workstation, the screen displays the results of the Power-On Confidence test (POC). When the POC is complete, the word LOADING will flash on the indicator line. Then, the display shown in Figure A-3 appears on your screen.



```
 000000       SSSS             /        333
00000000     SSSSSS           //       33333
00    00    SS   SS          ///      33   33
00    00    SS              ///            33
00    00     SS            ///            33
00    00       SS         ///             333
00    00         SS      ///               33
00    00    SS    SS    ///           33   33
00000000     SSSSSS     //            3333333
 000000       SSSS      /               3333


      UNISYS INTERACTIVE OPERATING SYSTEM
           DEPRESS TRANSMIT FOR LOGON
```

Figure A-3. OS/3 LOGON Request Screen

When this display appears, you may switch to SYSTEM mode and enter the LOGON command, or request the LOGON menu by pressing the TRANSMIT (XMIT) key.

A.2.2. LOGOFF Procedure

When you have completed your tasks using the workstation, enter the LOGOFF command as described in 1.8. After the LOGOFF ACCEPTED message is displayed, the OS/3 LOGON request screen described earlier is displayed. It remains displayed until the workstation screen is blanked, the workstation is turned off, or another user enters a LOGON command.

A.3. UNISCOPE 100 and 200 Terminals

The UNISCOPE 100 and 200 terminals have identical keyboards, as shown in Figure A-4. Table A-2 highlights frequently used special function keys (control keys) and describes each one. For more information on the UNISCOPE terminal keyboard, see the *UNISCOPE Display Terminal Operator Reference*, UP-7788.

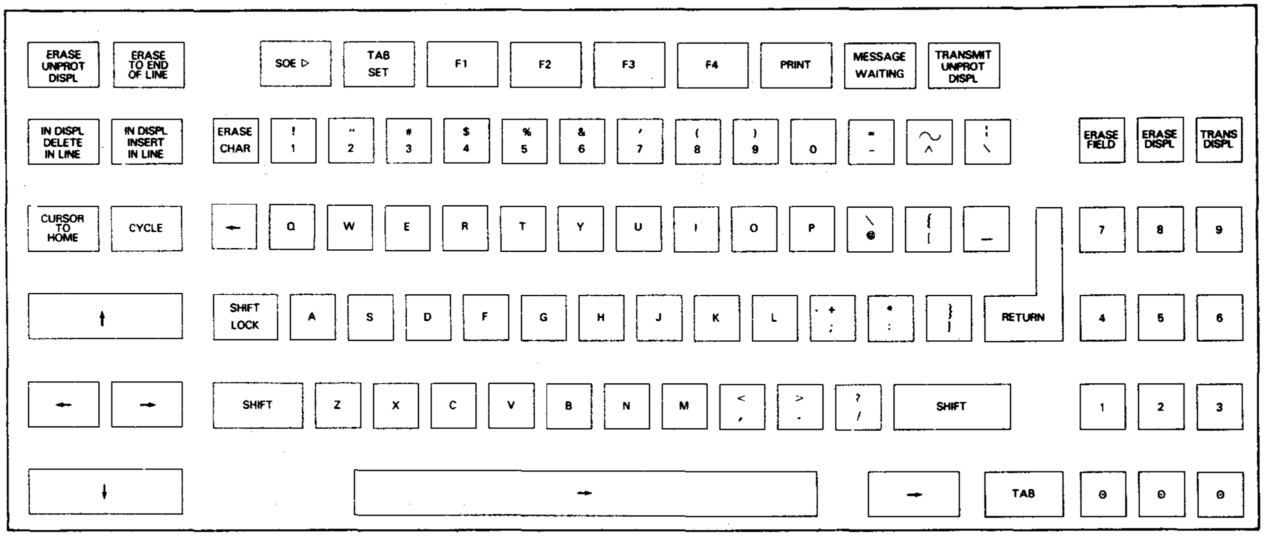
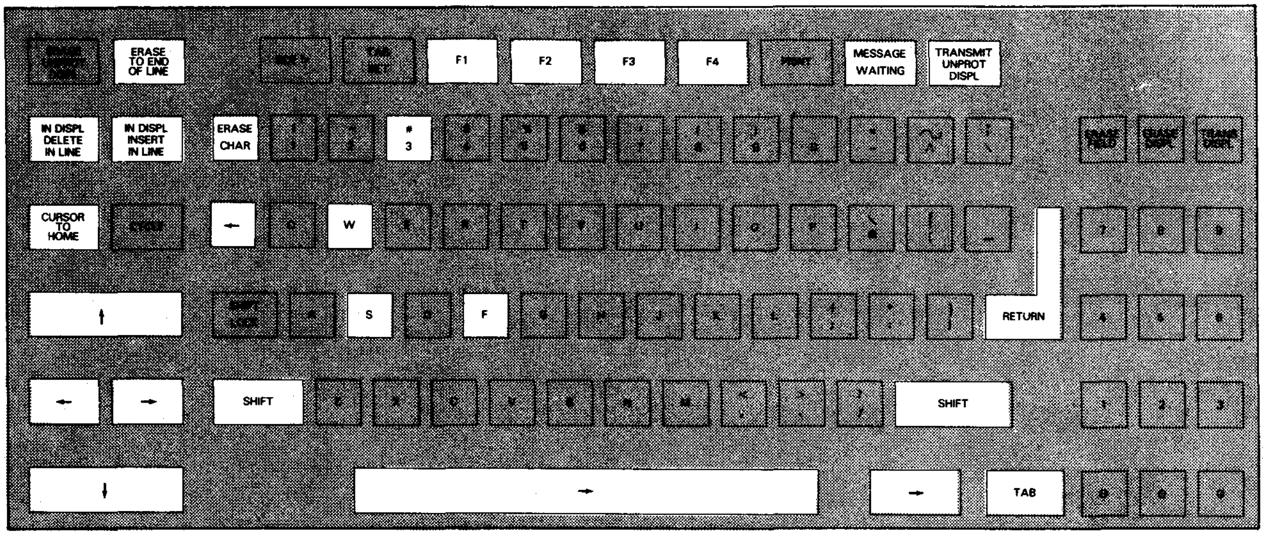


Figure A-4. UNISCOPE 100 and 200 Terminal Keyboard

Note: *Be careful when you respond to a message; removing two lines of data for SYSTEM mode could cause serious program errors when you return to WORKSTATION mode.*

Table A-2. UNISCOPE 100 and 200 Terminal Keyboard Functions

Key	Function
	UNISCOPE 100 and 200 Terminal Keyboard



Control Keys that Perform a System Function

Key	Function
TRANSMIT UNPROT DISPL	SENDING DATA TO THE SYSTEM - Pressing the transmit key TRANSMIT UNPROT DISPL sends your entry to the system. The entry may be a command, a response, a screen, or any information pertaining to one of the interactive utilities, such as the general editor.
MESSAGE WAITING	ENTERING SYSTEM MODE - You may issue workstation commands only in system mode. To enter system mode, press the MESSAGE WAITING key.
MESSAGE WAITING W S TRANSMIT UNPROT DISPL	ENTERING WORKSTATION MODE - You may obtain the LOGON menu and fill in data only in workstation mode. To enter workstation mode, press the MESSAGE WAITING key, the W key, the S key, then the TRANSMIT key.

continued

Table A-2. UNISCOPE 100 and 200 Terminal Keyboard Functions (cont.)

Key	Function
	Control Keys that Perform a System Function (cont.)
F1 to F4 For F5 to F22: MESSAGE WAITING → F → SHIFT + # 3 → % 5 to 22	USING FUNCTION KEYS - UNISCOPE terminals have four function keys available on the keyboard: F1, F2, F3, and F4. To simulate function keys F5 through F22, press the MESSAGE WAITING key, the F key, the pound symbol (#), then the function key number you wish to use. To simulate the MESSAGE WAITING key, enter system mode by pressing the MESSAGE WAITING key, then type MSG.
	Control Keys that Affect Screen Display and Position the Cursor
TAB	TAB FORWARD - Pressing the TAB key advances the cursor one tab setting.
→	SPACE BAR - Pressing the space bar moves the cursor forward one position.
CURSOR TO HOME	CURSOR TO HOME - Pressing the CURSOR TO HOME key repositions the cursor to the upper left-hand corner of the screen.
→ ← ↑ ↓	CURSOR SCAN KEYS Pressing the forward arrow moves the cursor forward one position. If the cursor is at the end of a line, it will move to the beginning of the next line. Pressing the back arrow moves the cursor back one position. If the cursor is at the beginning of a line, it will move to the last character position of the previous line. Pressing the up arrow moves the cursor up one line without changing its horizontal position. Pressing the down arrow moves the cursor down one line without changing its horizontal position. **Note:** Holding down any cursor scan key causes the cursor to move continuously until the key is released.

continued

Table A-2. UNISCOPE 100 and 200 Terminal Keyboard Functions (cont.)

Key	Function
Control Keys that Affect Screen Display and Position the Cursor (cont.)	
RETURN	RETURN KEY - Pressing the RETURN key moves the cursor to the beginning of the next line.
ERASE CHAR	ERASING A CHARACTER - To erase a character (replace it with a blank), place the cursor on the character and press the ERASE CHAR key.
IN DISPL DELETE IN LINE	DELETING A CHARCTER IN A LINE - To delete a character in a line, place the cursor on the character to be deleted and then press the DELETE IN LINE key. All characters on the same line to the right of the deleted character are moved left one position.
IN DISPL INSERT IN LINE	INSERTING A CHARACTER IN A LINE - To insert a character in a line, place the cursor on the character position immediately following the point of insertion. Press the INSERT IN LINE key. This inserts a blank to the left of the cursor position and moves all subsequent characters on the same line right one position. Move the cursor left one position. Press the desired character key.
ERASE TO END OF LINE	ERASING CHARACTERS TO THE END OF A LINE - Pressing the ERASE TO END OF LINE key erases all unprotected characters (the data you entered) from the cursor position to the end of the line or the end of the field, whichever occurs first.

A.3.1. Resuming Data Output

When your UNISCOPE terminal screen is full, the MESSAGE WAITING light turns on and the audible alarm sounds, just as when the system has a message for you. In fact, the system *does* have a message for you, informing you that the screen is full and asking whether you want to continue receiving data. Enter SYSTEM mode; the following message is displayed:

```
CONTINUE?
WORKSTATION DATA MODE FULL
```

As with other messages, this is displayed on the top two lines of the screen, causing the removal of any data present on those two lines. To respond, simply press the TRANSMIT key. The cursor is correctly positioned to the character position after the question mark on the top line of the screen.

A.3.2. LOGON Procedure

In order to log on to OS/3 interactive services from a UNISCOPE terminal, you must first sign on to ICAM through the standard terminal dialog of the ICAM terminal support facility. See A.6.1 for complete information on the standard terminal dialog. When your sign-on to ICAM has been accepted, you will receive the following message:

```
SESSION PATH OPEN
```

When you receive this message, you may either go into SYSTEM mode and enter the LOGON command, or press TRANSMIT to request the LOGON menu.

A.3.3. LOGOFF Procedure

When you have completed your tasks and wish to end your session of using the interactive services, enter the LOGOFF command as described in 1.8. After the LOGOFF ACCEPTED message is displayed, the OS/3 LOGON request screen is displayed. At this point, another user may log on to the system from your terminal. If you wish to terminate the communications connection of the terminal, you must perform the standard terminal sign-off command, $$SOFF. See A.6.3 for complete information on the sign-off command.

A.4. UTS 400 Terminal

The UTS 400 terminal keyboard contains keys (special function keys) in addition to the keys found on a regular typewriter keyboard. Figure A-5 illustrates the UTS 400 terminal. Table A-3 highlights the control keys and describes what each one does. For more information on the UTS 400 terminal keyboard, see the *Universal Terminal System 400 (UTS 400) Operator's Guide*, UP-8358.

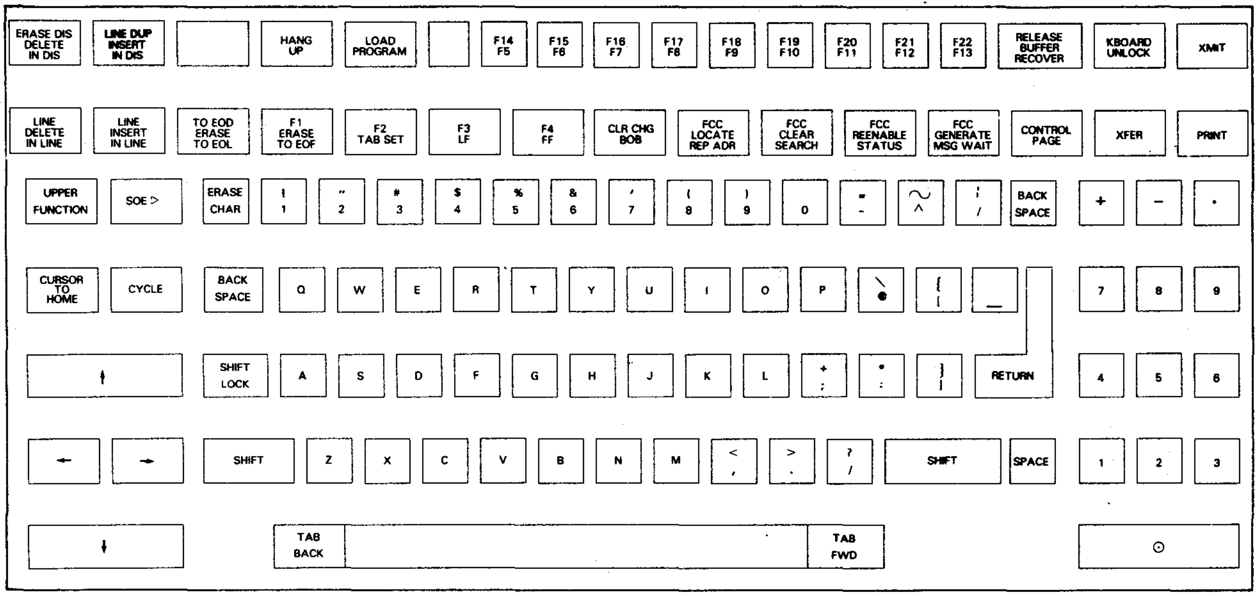
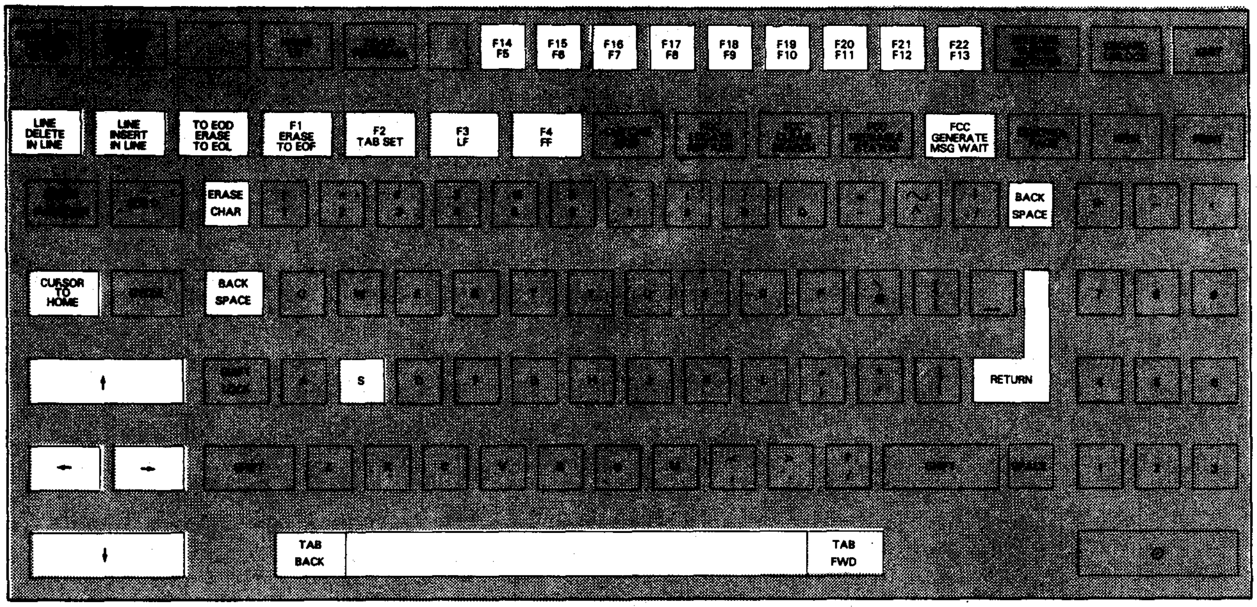


Figure A-5. UTS 400 Keyboard

Table A-3. UTS 400 Terminal Keyboard Functions

Key	Function
	UTS 400 Keyboard



XMIT	SENDING DATA TO THE SYSTEM - Pressing the transmit key, XMIT, sends your entry to the system. The entry can be a command, a response, a screen, or any information pertaining to one of the interactive utilities, such as the general editor.
UPPER FUNCTION	ACTIVATING THE UPPER FUNCTION OF A KEY - Certain control keys have dual functions, which are printed on their top, and certain data keys have a control function printed on their front. To activate the upper function of a control key or the front face of a data key, press the UPPER FUNCTION key and, while holding it down, press the desired key.
FCC GENERATE MSG WAIT	ENTERING SYSTEM MODE - You may issue interactive commands only in SYSTEM mode. To enter SYSTEM mode, press the MSG WAIT key.

continued

Table A-3. UTS 400 Terminal Keyboard Functions (cont.)

Key	Function
	UTS 400 Keyboard (cont.)
FCC GENERATE MSG WAIT W S XMIT	ENTERING WORKSTATION MODE - You obtain the LOGON menu and fill in data only in WORKSTATION mode. To enter WORKSTATION mode, press the MSG WAIT key, the W key, the S key, and the XMIT key.
F1 ERASE TO EOF to F22 F13 + UPPER FUNCTION	USING FUNCTION KEYS - The UTS 400 terminals have the same number of function keys as the System 80 workstation. Some are lowercase function keys; the rest are uppercase function keys. To use the lowercase function keys, press the function key you wish to use. To use the uppercase function keys, press the UPPER FUNCTION key and, while holding it down, press the function key you wish to use.
TAB FWD	TAB FORWARD KEY - Pressing the TAB FWD key advances the cursor one tab setting.
TAB BACK	TAB BACK KEY - Pressing the TAB BACK key moves the cursor back one tab setting.
▭	SPACE BAR - Pressing the space bar moves the cursor forward one position.
CURSOR TO HOME	CURSOR TO HOME KEY - Pressing the CURSOR TO HOME key repositions the cursor to the upper left-hand corner of the screen.

continued

Table A-3. UTS 400 Terminal Keyboard Functions (cont.)

Key	Function
	UTS 400 Keyboard (cont.)
→ ← ↑ ↓	CURSOR SCAN KEYS Pressing the forward arrow moves the cursor forward one position. If the cursor is at the end of a line, it will move to the beginning of the next line. Pressing the back arrow moves the cursor back one position. If the cursor is at the beginning of a line, it will move to the last character position of the previous line. Pressing the up arrow moves the cursor up one line without changing its horizontal position. Pressing the down arrow moves the cursor down one line without changing its horizontal position. **Note:** Holding down any cursor scan key causes the cursor to move continuously until the key is released.
BACK SPACE	BACK SPACE KEY - Pressing the BACK SPACE key moves the cursor back one position.
RETURN	RETURN KEY - Pressing the RETURN key moves the cursor to the beginning of the next line.
ERASE CHAR	ERASING A CHARACTER - To erase a character (replace it with a blank), place the cursor on the character and press the ERASE CHAR key.
LINE DELETE IN LINE	DELETING A CHARACTER IN A LINE - To delete a character in a line, place the cursor on the character to be deleted and press the DELETE IN LINE key. All characters on the same line to the right of the deleted character are moved left one position.
LINE INSERT IN LINE	INSERTING A CHARACTER IN A LINE - To insert a character in a line, place the cursor in the character position immediately following the point of insertion. Press the INSERT IN LINE key. This inserts a blank to the left of the cursor position and moves right one position all subsequent characters on the same line. Move the cursor left one position. Press the desired character key.

continued

Table A-3. UTS 400 Terminal Keyboard Functions (cont.)

Key	Function
	UTS 400 Keyboard (cont.)
TO EOD ERASE TO EOL	ERASING CHARACTERS TO THE END OF A LINE - Pressing the ERASE TO EOL key erases all unprotected characters (data you entered) from the cursor position to the end of the line or the end of the field, whichever occurs first.
F1 ERASE TO EOF	ERASING CHARACTERS TO THE END OF A FIELD - Pressing the ERASE TO EOF key erases all unprotected characters (data you entered) from the cursor position to the end of the field.
LINE DELETE IN LINE + UPPER FUNCTION	DELETING A LINE - Pressing the UPPER FUNCTION key and, while holding it down, pressing the DELETE LINE key removes the line in which the cursor is located. All lines following the deleted line are moved up one line, and a blank line is inserted at the bottom of the screen. The cursor remains in the same position after the DELETE LINE key is pressed.
LINE INSERT IN LINE + UPPER FUNCTION	INSERTING A LINE - Pressing the UPPER FUNCTION key and, while holding it down, pressing the INSERT LINE key inserts a blank line in front of the line where the cursor is located. All lines below the inserted blank line are moved down one line. The cursor remains in the same position as before pressing the INSERT LINE key.

A.4.1. Resuming Data Output

The procedure for resuming data output on the UTS 400 terminal is the same as the one for the UNISCOPE 100 and 200 terminals.

A.4.2. LOGON Procedure

The LOGON procedure for the UTS 400 terminal is the same as the one for the UNISCOPE 100 and 200 terminals. You must first connect the terminal through ICAM, and then log on.

A.4.3. LOGOFF Procedure

The LOGOFF procedure for the UTS 400 terminal is the same as the one for UNISCOPE terminals.

A.5. System 80 Console Workstation

Figure A-6 shows two available models of the console workstation keyboard. The control keys are the same as for the System 80 workstation keyboards. See Table A-1 for details.

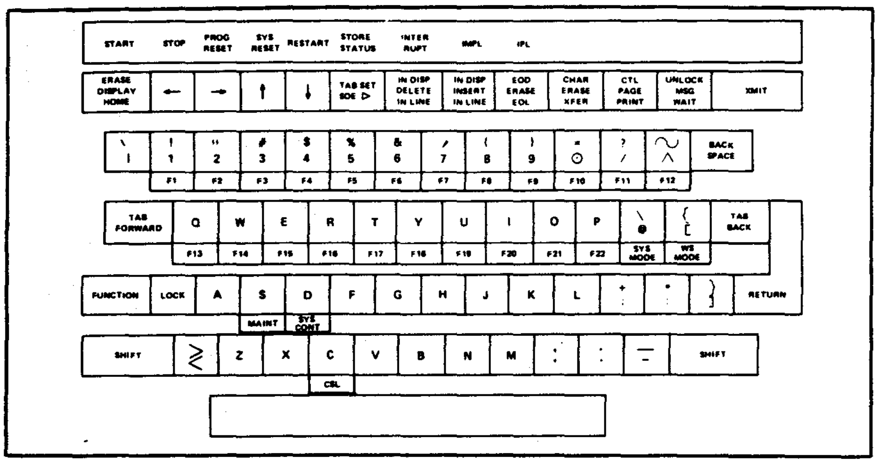
A.5.1. Mode Switching

Switching between WORKSTATION and SYSTEM modes is handled in the same way as on the System 80 workstation. To switch from either mode to a console function mode, press the FUNCTION key and, while holding it down, press alphabetic C, D, or S for the appropriate console mode. If you are using the console workstation as a workstation (operating in either SYSTEM or WORKSTATION mode) and an informational message develops concerning a console function, the following is displayed on the console workstation indicator line:

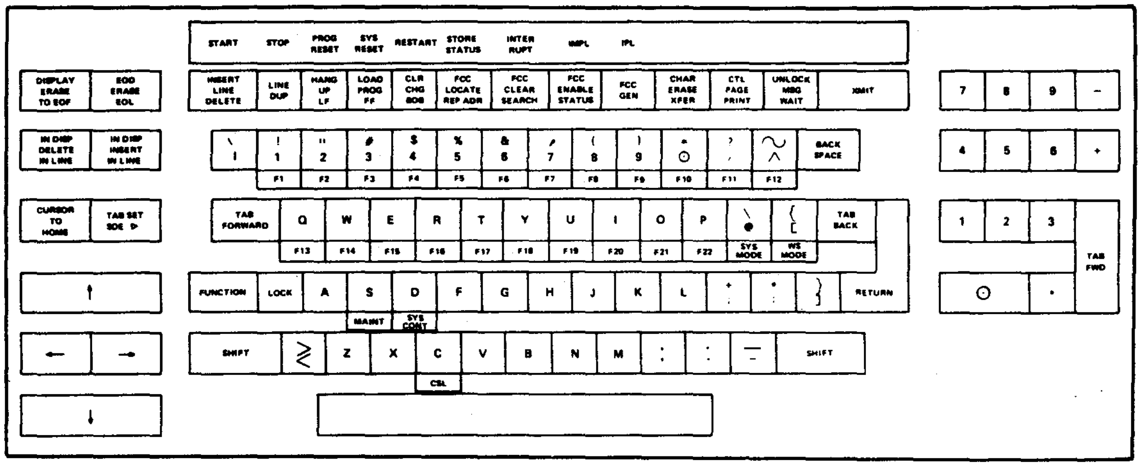
```
CNSMSG
```

To view the message, press the FUNCTION key and, while holding it down, press alphabetic C. The message is displayed on the second line of the screen, and CNSMSG is extinguished from the indicator line.

Note: *The CTL PAGE and UNLOCK key functions present on the System 80 console workstation keyboard are not necessary to the normal functioning of the console workstation. Pressing these keys while commands or programs are being executed could cause unpredictable results.*



Console Workstation Keyboard A



Console Workstation Keyboard B

Figure A-6. Console Workstation Keyboards

If a message develops concerning a console function that requires a response, or if more than 14 informational messages accumulate, the following is displayed on the console workstation indicator line:

```
CNSREQ
```

The TRANSMIT key is also locked, preventing you from performing any workstation functions until you have responded to the console message. When you enter console mode, the message is displayed and CNSREQ is extinguished from the indicator line. After informational messages are displayed, they roll up and off the screen.

If, prior to entering console mode, you had begun a job in which the console workstation is used as a workstation, informational messages concerning the workstation job could develop. When this occurs, the following is displayed on the console workstation indicator line:

```
WSMSG
```

To view the message, press the FUNCTION key and, while holding it down, press the SYS MODE key. The message is displayed on the second line of the screen, and WSMSG is extinguished from the indicator line. If a message develops concerning the workstation job that requires a response, the following is displayed on the console workstation indicator line:

```
WSREQ
```

Note that the console functions are *not* locked by the appearance of this indicator. To view the message and respond to it, press the FUNCTION key and, while holding in down, press the SYS MODE key. The message is displayed and WSREQ is extinguished from the indicator line. Since console functions are not locked by this indicator, response messages may roll off the screen before you have a chance to answer them. Should this happen, use the REBUILD command (1.6.4) to redisplay them.

A.5.2. LOGON Procedure

If you wish to perform any workstation functions from the console workstation, you must first log on.

To log on when you are in any of the three console modes, press the FUNCTION key and, while holding it down, press the WS MODE key. At this point, you may press the TRANSMIT key to obtain the LOGON menu, or you may enter SYSTEM mode to enter the LOGON command. You may also enter SYSTEM mode directly from any of the console modes.

A.5.3. LOGOFF Procedure

The LOGOFF procedure for the System 80 console workstation is the same as the one for the System 80 workstation.

Note: *When you are using the console workstation as a workstation (either in SYSTEM or WORKSTATION mode), you are subject to the same restrictions as other workstation users. You may only control jobs either initiated or running under the user-id you logged on with, unless you have been given global control privileges by the system administrator.*

A.6. Information for ICAM-Connected Terminals

In order to use the interactive facilities from a remote terminal, you must first connect the terminal to your system through the ICAM (Integrated Communications Access Method) terminal support facility. Since terminal identifications and file names vary from system to system, you should consult your system administrator for particular information about your system. The following sections provide information on the standard terminal dialog, the $$SON, and $$SOFF commands provided by ICAM for connection of remote terminals.

A.6.1. Standard Terminal Dialog

The ICAM terminal support facility provides a command processor module to process terminal operator requests to dynamically establish or end a communications session. The terminal operator enters sign-on or sign-off commands when it is necessary to communicate with a user program, a process file, or another terminal in the network, or to end a session with one of these. Standard terminal dialog is available with global networks that provide dynamic session establishment.

When the command processor receives a valid sign-on command, the message:

```
UNISYS DCA NETWORK, LEVEL I, I, NODE ID xxxx
```

is sent to the initiating terminal, immediately.

where:

`l,l`
: Is the operating system release level.

`xxxx`
: Is the global network node identifier you specified in the TYPE operand of the CCA macroinstruction in your network definition.

If the sign-on request is honored, the message:

```
SESSION PATH OPEN
```

is sent to the initiating terminal; and if the session is between terminals, the two messages are sent to the requested terminal.

If the request for session establishment is rejected, the message:

```
SESSION PATH CLOSED
```

is sent to the initiating terminal.

If the request for sign-off (of an established session) is issued by another terminal or a user program, the messages:

```
SESSION PATH CLOSED

$$SOFF
```

are sent to your terminal following session disestablishment.

If your program aborts an established session, the message:

```
SESSION PATH ABORTED
```

is sent to the affected terminal.

If an invalid command is entered at a terminal, the message:

```
INVALID $$ COMMAND
```

is returned to the terminal.

A.6.2. SIGN-ON Command ($$SON)

This command enables you to establish a session with a user program, a process file, or another terminal.

Format

```
$$SON xxxxyyyy
```

where:

xxxx

Is the logical name of the terminal from which you issue this command; i.e., the label of the TERM macroinstruction with which you defined the terminal in your network definition.

yyyy

Is the logical name of:

- A user program (as defined in the label of a LOCAP macroinstruction you defined in your network definition or the APPS operand of an NATTACK interface macroinstruction)
- A process file (as defined in the label of a PRCS macroinstruction)
- Another terminal (as defined in the label of a TERM macroinstruction)

A.6.3. SIGN-OFF Command ($$SOFF)

This command requests dynamic session disestablishment. You use it to end a dynamic session.

If your terminal is connected to ICAM by means of a dial line and you issue this command, ICAM holds the telephone connection for 60 seconds after it has ended (disestablished) the session. Thus, you can issue a subsequent sign-on command to establish another session without needing to redial.

Format

```
$$SOFF
```

There are no parameters associated with this command.

A.7. Procedure Table

Table A-4 summarizes the various procedures involved in communicating with the interactive services, and how each type of terminal performs each procedure.

Table A-4. Procedure Table

Procedure	Local Workstation	Remote Workstation	UNISCOPE Terminal	UTS 400	System 80 Console Workstation
$$SON	NO	NO	YES	YES	NO
LOGON	YES	YES	YES	YES	YES
SYSTEM mode	Press FUNCTION and SYS MODE keys, or press TRANSMIT.	Press FUNCTION and SYS MODE keys, or press TRANSMIT.	Press MESSAGE WAITING key.	Press MSG WAIT key.	Press FUNCTION and SYS FUNCTION keys.
WORKSTATION mode	Press FUNCTION and WS MODE keys.	Press FUNCTION and WS MODE keys.	Press MESSAGE WAITING key. Then, press W and S keys; then press TRANSMIT.	Press MSG WAIT key. Then, press W and S keys; then press TRANSMIT.	Press FUNCTION and WS MODE keys.
Function keys	Press FUNCTION and F1 - F22 keys.	Press FUNCTION and F1 - F22 keys.	Press MESSAGE WAITING key. Then, press F1 - F4; for rest, press F5 - F22.	Press F1 - F22 UPPER FUNCTION when required.	Press FUNCTION and F1 - F22 keys.
Message waiting indicator	SYS MSG displayed on indicator line.	SYS MSG displayed on indicator line.	MESSAGE WAITING light is lit. Audible alarm sounds.	MESSAGE WAITING light is lit. Audible alarm sounds.	SYS MSG displayed on indicator line
*Save and restore SYS mode lines	YES	YES	NO	NO	YES
LOGOFF	YES	YES	YES	YES	YES
$$SOFF	NO	NO	YES	YES	NO

Notes:

1. *You do not enter the $$SON command to log on from a direct-connected System 80 workstation. However, to connect the System 80 workstation to a program such as the Information Management System (IMS), which requires the use of the Integrated Communications Access Method (ICAM), you must enter $$SON after logging on normally. At the conclusions of the session, you must enter $$SOFF before logging off the workstation.*

2. *For a remote workstation (RWS line with ICAM), you must LOGON to interactive services before issuing $$SON to ICAM (for example, IMS and TIP). Once the LOGON is completed, the RWS is accessed in the same manner as a local workstation.*

3. *UTS40D and SVT1122 local workstations logged on to Interactive Services and signed on screen 1 to ICAM are able to $$SON from data mode on screen 2. Messages such as SESSION RESOURCES NOT AVAILABLE for screen 2 will appear in system mode on screen 1. You can terminate your session on screen 1 using a $$SOFF command and continue to use data mode on screen 2. A logoff is permitted while a screen 2 session is active. When finished, you should $$SOFF from data mode on screen 2.*

4. *Any function key or sysmode request will put you in system mode on a workstation that is not logged on. This includes devices generated as UNISCOPE devices to ICAM devices that have SR / ON set in the control page. Once the workstation is logged on, function keys and system mode will respond as in Table A-4. Once you are logged on, pressing sysmode on a UNISCOPE device with SR / ON will cause an invalid function key message to be displayed.*

Appendix B
Workstation Commands

For quick reference, all the commands you may enter from a workstation are listed here.

```
ALLOCATEΔ {ST} , FILENAME= { filename  } [,RDPASS=password][,WRPASS=password]
          {MI}             {'filename' }
                           {"filename" }

 ,VSN=volume[,CONTIG= {YES}][,INC= {n}],SIZE=n
            [         {NO }][      {1}]
```

```
ASKΔ[user-id],'text'
```

```
BASIC
```

Rescheduling All Jobs or Jobs in a Particular Job Queue:

```
BEGINΔJBQ[,{A}]
           {H}
           {N}
           {P}
           {L}
```

Rescheduling Individual Jobs:

```
BEGINΔjobname
```

Releasing Held Spooled Files:

```
BEGINΔSPL, [ { ALL   } ] [,ACCT=acctno][,BNUMB=binary-jobno][,CART=cartridge-name]
           [ { LOG   } ]
           [ { PRINT } ]
           [ { PUNCH } ]
           [ { RDR   } ]

  [ ,DEV= { 770 } ]  [,FILE=filename][,FORM=formname][,JOB=jobname][,STEP=stepno]
  [       { 776 } ]
  [       { 789 } ]

  [ ,OUT= { did } ]
  [       { NO  } ]
```

```
BRKPTΔ { P } , { PR } [,ACCT=acctno][,CART=cartridge-name]
       { I }   { PU }

   [ ,DEV= { 770 } ] [,FILE=filename][,FORM=formname],JOB=jobname[,HOLD]
   [       { 776 } ]
   [       { 789 } ]
```

```
BRKPTΔLOG [ ,OUT= { TAPE     } ] [,HOLD]
          [       { DISK     } ]
          [       { DISKETTE } ]
```

```
CANCELΔjobname [ , { D } ]
               [   { N } ]
```

```
CHANGEΔjobname, { H }
                { N }
                { P }
                { L }
```

Releasing Held Spooled Files: (cont.)

```
CHANGEΔSPL, ⎧ALL  ⎫
            ⎨LOG  ⎬
            ⎩PRINT⎭

  [,modifier-1 ... modifier-n]
    [,COPIES=nnn]

  ⎧ ⎡,DVC= ⎧770   ⎫⎤        ⎫
  ⎪ ⎢      ⎪776   ⎪⎥        ⎪
  ⎪ ⎢      ⎪PPC   ⎪⎥        ⎪
  ⎪ ⎢      ⎨ANY   ⎬⎥        ⎪
  ⎪ ⎢      ⎪CLASS1⎪⎥        ⎪
  ⎪ ⎢      ⎪CLASS2⎪⎥        ⎪
  ⎨ ⎣      ⎩CLASS3⎭⎦        ⎬
  ⎪                         ⎪
  ⎪ ⎡,DVC=AUX,ID= ⎧*      ⎫⎤⎪
  ⎪ ⎣             ⎩user-id⎭⎦⎪
  ⎪                         ⎪
  ⎪ ⎡,ID= ⎧*      ⎫⎤        ⎪
  ⎩ ⎣     ⎩user-id⎭⎦        ⎭
```

```
COMMENTΔMODULE=modulename ⎡,TYPE= ⎧module-type⎫⎤,FILENAME= ⎧filename  ⎫
                          ⎣       ⎩$          ⎭⎦           ⎨'filename'⎬
                                                           ⎩"filename"⎭

  [,RDPASS=password][,WRPASS=password],VSN=volumeΔtext
```

```
CONNECTΔjob[,filename]
```

Copying SAT or MIRAM Library Modules:

```
COPYΔMODULE=modulename  ⎡,TYPE= ⎧module-type⎫⎤ ,FILENAME= ⎧ filename  ⎫
                        ⎣       ⎩S          ⎭⎦            ⎨ 'filename'⎬
                                                          ⎩ "filename"⎭

 [,RDPASS=password],VSN=volumeΔTOΔMODULE=modulename ⎡,TYPE= ⎧module-type⎫⎤
                                                    ⎣       ⎩S          ⎭⎦

  ,FILENAME= ⎧filename  ⎫ [,RCSZ=n][,WRPASS=password],VSN=volaume
             ⎨'filename'⎬
             ⎩"filename"⎭

  ⎡,CONTIG= ⎧YES⎫⎤ ⎡,INC= ⎧n⎫⎤[,SIZE=n]⎡,SAT= ⎧YES⎫⎤Δ[NUMBER][,HEX][,WAIT]
  ⎣         ⎩NO ⎭⎦ ⎣      ⎩1⎭⎦         ⎣      ⎩NO ⎭⎦
```

Copying MIRAM Data Files:

```
COPYΔFILENAME= ⎧filename  ⎫ [,RDPASS=password],VSN=volume ⎡,KEYNO= ⎧n⎫⎤
               ⎨'filename'⎬                               ⎣        ⎩0⎭⎦
               ⎩"filename"⎭

  ⎡,DEVICE= ⎧did     ⎫⎤ΔTOΔFILENAME= ⎧filename  ⎫
  ⎢         ⎨DISK    ⎬⎥              ⎨'filename'⎬
  ⎣         ⎩DISKETTE⎭⎦              ⎩"filename"⎭

  [,WRPASS=password],VSN=volume⎡,CONTIG= ⎧YES⎫⎤ ⎡,INC= ⎧n⎫⎤
                               ⎣         ⎩NO ⎭⎦ ⎣      ⎩1⎭⎦

  ⎡,KEYNO= ⎧n⎫⎤⎡,KEYi= ⎧n:m                                ⎫⎤ [,SIZE=n]
  ⎣        ⎩0⎭⎦⎢       ⎨ ⎛n:m,⎧DUP ⎫ , ⎧CHG ⎫⎞             ⎬⎥
               ⎣       ⎩ ⎝    ⎩NDUP⎭   ⎩NCHG⎭⎠             ⎭⎦

  ⎡,INIT= ⎧YES⎫⎤⎡,RCB= ⎧YES⎫⎤⎡,RCFM= ⎧FIX⎫⎤[,RCSZ=n]⎡,EXTEND= ⎧YES⎫⎤,[BFSZ=n]
  ⎣       ⎩NO ⎭⎦⎣      ⎩NO ⎭⎦⎣       ⎩VAR⎭⎦         ⎣         ⎩NO ⎭⎦

  ⎡,SCSZ= ⎧n  ⎫⎤⎡,DEVICE= ⎧did     ⎫⎤Δ[NUMBER][,HEX][,WAIT]
  ⎣       ⎩256⎭⎦⎢         ⎨DISK    ⎬⎥
                ⎣         ⎩DISKETTE⎭⎦
```

Copying Spool Files:

```
COPYΔ[JOB=jobname] [,HOLD= {L}] [,FILENAME= {filename  }] [,ACCT=acct],QUEUE= {LOG  }
                           {N}              {'filename'}                      {PRINT}
                           {Y}              {"filename"}                      {PUNCH}
                                                                              {RDR  }

  [,ALL= {YES}] [,SKIP= {n}] ΔTOΔ[JOB=jobname] [,HOLD= {N}] [,FILENAME= {filename  }]
         {NO }          {Ø}                            {Y}              {'filename'}
                                                                        {"filename"}

  ,QUEUE= {PRINT} Δ[NUMBER][,HEX][,WAIT]
          {PUNCH}
          {RDR  }
```

Copying Tape Files:

```
COPYΔ[FILENAME= {filename  }] [,RDPASS=password],VSN=volume,DEVICE= {did }
                {'filename'}                                        {TAPE}
                {"filename"}

  [,BKNO= {YES}] ΔTOΔ
          {NO }

  [FILENAME= {filename  }] [,WRPASS=password],VSN=volume,DEVICE= {did }
             {'filename'}                                        {TAPE}
             {"filename"}

  [,INIT= {YES}] [,EXTEND= {YES}]
          {NO }            {NO }

  [,BFSZ=n] [,BKNO= {YES}] [,RCFM= {FIXUNB}] [,RCSZ=n]Δ[NUMBER][,HEX][,WAIT]
                    {NO }          {FIXBLK}
                                   {VARUNB}
                                   {VARBLK}
                                   {UNDEF }
```

Copying Unit Record Files:

```
COPYΔDEVICE= {did      } ,FILENAME= {filename  } ,VSN=volume
             {DISKETTE }            {'filename'}
             {RDR      }            {"filename"}

 ΔTOΔDEVICE= {did      } [,RCFM= {FIX} ] [,RCSZ=n]
             {DISKETTE } [       {VAR} ]
             {PRINT    } [             ]
             {PUNCH    }

  ,FILENAME= {filename  } ,VSN=volumeΔ[NUMBER][,HEX][,WAIT]
             {'filename'}
             {"filename"}
```

```
DDPΔcommand-string
```

```
DEFKEYΔ {F#nn} , {'command string'}
        {MW  }   {"command string"}
```

Deleting Function Key Definitions:

```
DEFKEYΔ {F#mm}
        {MW  }
```

```
DEFKEYΔDISPLAY
```

```
DELETEΔSPL, {ALL  } [,ACCT=acctno][,BNUMB=binary-jobno][,CART=cartridge-name]
            {LOG  }
            {PRINT}
            {PUNCH}
            {RDR  }

  [,DEV= {770} ] [,FILE=filename][,FORM=formname][,JOB=jobname][,STEP=stepno]
  [      {776} ]
  [      {789} ]
```

continued

Deleting a Specific Job:

```
DELETEΔjobname[,LOG]
```

Deleting All Jobs from One or All Job Queues:

```
DELETEΔJBQ, ⎧A⎫ [,LOG]
            ⎪H⎪
            ⎨N⎬
            ⎪P⎪
            ⎩L⎭
```

```
DISPLAYΔJBQ, ⎧A⎫
             ⎪H⎪
             ⎨N⎬
             ⎪P⎪
             ⎩L⎭
```

```
DISPLAYΔACT⎡, ⎧ALL  ⎫⎤[,ACCT=acctno][,CART=cartridge-name]
           ⎢  ⎨PRINT⎬⎥
           ⎣  ⎩PUNCH⎭⎦

 ⎡,DEV= ⎧770⎫⎤[,FILE=filename][,FORM=formname][,JOB=jobname][,STEP=stepno]
 ⎢      ⎨776⎬⎥
 ⎣      ⎩789⎭⎦
```

```
DISPLAYΔJS[,jobname]
```

```
DISPLAYΔLOG
```

```
DISPLAYΔSPL⎡, ⎧ALL  ⎫⎤[,ACCT=acctno][,CART=cartridge-name]
           ⎢  ⎪LOG  ⎪⎥
           ⎢  ⎨PRINT⎬⎥
           ⎢  ⎪PUNCH⎪⎥
           ⎣  ⎩RDR  ⎭⎦

 ⎡,DEV= ⎧770⎫⎤[,FILE=filename][,FORM=formname][,JOB=jobname][,STEP=stepno]
 ⎢      ⎨776⎬⎥
 ⎣      ⎩789⎭⎦
```

continued

Deleting All Jobs from One or All Job Queues: (cont.)

```
DLOADΔ ⎧program-name⎫
       ⎩/OFFLINE    ⎭
```

```
EDTΔ[initial command]
```

To Run a Command Stream from a Library File:

```
ENTERΔMODULE=modulename ⎡,TYPE= ⎧module-type⎫⎤ ,FILENAME= ⎧filename  ⎫
                        ⎣       ⎩$          ⎭⎦            ⎨'filename'⎬
                                                          ⎩"filename"⎭
  [,RDPASS=password],VSN=volume
```

To Run a Command Stream from a Spooled File:

```
ENTERΔ ⎡,HOLD= ⎧N⎫⎤ ⎡,FILENAME= ⎧filename  ⎫⎤ ,QUEUE=RDR
       ⎣       ⎩Y⎭⎦ ⎢           ⎨'filename'⎬⎥
                    ⎣           ⎩"filename"⎭⎦
```

To Run a Command Stream from a DSL Diskette:

```
ENTERΔ ⎡FILENAME= ⎧filename  ⎫⎤ [,RDPASS=password],VSN=volume ⎡,DEVICE= ⎧did     ⎫⎤
       ⎢          ⎨'filename'⎬⎥                               ⎣         ⎩DISKETTE⎭⎦
       ⎣          ⎩"filename"⎭⎦
```

To Run a Command Stream from a Tape:

```
ENTERΔ ⎡FILENAME= ⎧filename  ⎫⎤ [,RDPASS=password],VSN=volume ⎡,DEVICE= ⎧did ⎫⎤
       ⎢          ⎨'filename'⎬⎥                               ⎣         ⎩TAPE⎭⎦
       ⎣          ⎩"filename"⎭⎦
```

To Run a Command Stream from a Card Reader:

```
ENTERΔ[DEVICE= {did}]
               {RDR}
```

Erasing a Library Module:

```
ERASEΔMODULE=modulename[,TYPE= {module-type}],FILENAME= {filename  }
                              {$          }            {'filename'}
                                                       {"filename"}
  [,WRPASS=password],VSN=volume
```

Erasing Library and MIRAM Files:

```
ERASEΔFILENAME= {filename  }[,WRPASS=password],VSN=volume
                {'filename'}
                {"filename"}
```

```
ESCORT
```

```
EXECUTE program-name
```

```
FILE {([did],label)} Δ [{:alt-filename                                  }]
     {(RDR,label)  }   [{: (alt-filename, {RES})                        }]
                       [{                 {RUN}                         }]
                       [{                 {vsn})                        }]
                       [{: (alt-filename, [{RES}]write-pass)            }]
                       [{                 [{RUN}]                       }]
                       [{                 [{vsn}]          )            }]
```

```
FREE
```

```
FSTATUSΔ[MODULE=modulename][,TYPE= {module-type}],FILENAME= {filename  }
                                   {$          }            {'filename'}
                                                            {"filename"}
  [,RDPASS=password],VSN=volumeΔ[LONG]
```

continued

Erasing Library and MIRAM Files: (cont.)

```
GOΔjobname[,nn]
```

```
HELPΔ ⎧command          ⎫
      ⎨message-no       ⎬
      ⎩keyword-parameter⎭
```

Holding All Jobs or All Jobs on a Particular Job Queue:

```
HOLD JBQ ⎡ ⎧A⎫ ⎤
         ⎢ ⎪H⎪ ⎥
         ⎢,⎨N⎬ ⎥
         ⎢ ⎪P⎪ ⎥
         ⎣ ⎩L⎭ ⎦
```

Holding an Individual Job:

```
HOLDΔjobname
```

Holding Spooled Files:

```
HOLDΔSPL, ⎡⎧ALL  ⎫⎤[,ACCT=acctno][,BNUMB=binary-jobno][,CART=cartridge-name]
          ⎢⎪PRINT⎪⎥
          ⎢⎨PUNCH⎬⎥
          ⎢⎪LOG  ⎪⎥
          ⎣⎩RDR  ⎭⎦

  ⎡      ⎧770⎫⎤[,FILE=filename][,FORM=formname][,JOB=jobname][,STEP=stepno]
  ⎢,DEV= ⎨776⎬⎥
  ⎣      ⎩789⎭⎦
```

```
HU
```

continued

Holding Spooled Files: (cont.)

```
                                                 ┌                   ┐┌              ┐
LOGONΔuser-id[,acct][,password][,exec-pro]       │,BULLETIN= {NO  }  ││,LOG= {YES}    │
                                                 │           {YES }  ││      {NO }    │
                                                 └                   ┘└              ┘
  [,NEW-PASSWORD=new-password]
```

```
LOGOFF
```

```
      ┌             ┌   ┌                                  ┐  ┐┐
MENUΔ │[menu-name]  │ , │filename,vsn                      │  ││
      │             │   │        ┌    ┌     ┐ ┐            │  ││
      │             │   │$Y$FMT  │ ,  │ RES │ │            │  ││
      │             │   │        │    │ vsn │ │            │  ││
      └             └   └        └    └     ┘ ┘            ┘  ┘┘
```

```
MENUGEN
```

```
PAUSEΔjobname
```

```
{PR} Δ[function-code][,ACCT=acctno][,BNUMB=binary-jobno][,CART=cartridge-name]
{PU}

 [,FILE=filename][,FORM=formname][,JOB=jobname]
```

Printing a SAT or MIRAM Library Module:

```
                            ┌                        ┐
PRINTΔMODULE=modulename     │,TYPE= {module-type}    │ ,FILENAME= {filename  }
                            │       {S          }    │            {'filename'}
                            └                        ┘            {"filename"}

                                  ┌               ┐
 [,RDPASS=password],VSN=volume    │,COPIES= {n}   │Δ[DIRECT][,NUMBER][,HEX][,WAIT]
                                  │         {1}   │
                                  └               ┘
```

Printing a MIRAM Data File:

```
PRINTΔFILENAME= ⎧ filename   ⎫ [,RDPASS=password],VSN=volume
                ⎨ 'filename' ⎬
                ⎩ "filename" ⎭

 ⎡,KEYNO= n ⎤⎡,COPIES n ⎤⎡,DEVICE= ⎧ did      ⎫⎤
 ⎢        0 ⎥⎢        1 ⎥⎢         ⎨ DISKETTE ⎬⎥
 ⎣          ⎦⎣          ⎦⎢         ⎩ DISK     ⎭⎥
                         ⎣                      ⎦
Δ[DIRECT][,NUMBER][,HEX][,WAIT]
```

Printing a Spool File:

```
PRINTΔ[JOB=jobname] ⎡,HOLD= ⎧L⎫⎤⎡,FILENAME= ⎧ filename   ⎫⎤[,ACCT=acct]
                    ⎢       ⎨N⎬⎥⎢           ⎨ 'filename' ⎬⎥
                    ⎢       ⎩Y⎭⎥⎢           ⎩ "filename" ⎭⎥
                    ⎣          ⎦⎣                         ⎦

 ,QUEUE= ⎧LOG  ⎫ ⎡,ALL= ⎧YES⎫⎤⎡,COPIES= ⎧n⎫⎤⎡,SKIP= ⎧n⎫⎤Δ[DIRECT][,NUMBER][,HEX][,WAIT]
         ⎪PRINT⎪ ⎢      ⎩NO ⎭⎥⎢         ⎩1⎭⎥⎢       ⎩0⎭⎥
         ⎨PUNCH⎬ ⎣           ⎦⎣            ⎦⎣           ⎦
         ⎩RDR  ⎭
```

Printing a Tape File:

```
PRINTΔ ⎡FILENAME= ⎧ filename   ⎫⎤[,RDPASS=password],VSN=volume,DEVICE= ⎧did ⎫
       ⎢          ⎨ 'filename' ⎬⎥                                      ⎩TAPE⎭
       ⎢          ⎩ "filename" ⎭⎥
       ⎣                        ⎦

 ⎡,BKNO= ⎧YES⎫⎤Δ[DIRECT][,NUMBER][,HEX][,WAIT]
 ⎢       ⎩NO ⎭⎥
 ⎣            ⎦
```

Printing a Unit Record File:

```
PRINTΔDEVICE= ⎧ did      ⎫,FILENAME= ⎧ filename   ⎫,VSN=volume
              ⎨ DISKETTE ⎬           ⎨ 'filename' ⎬
              ⎩ RDR      ⎭           ⎩ "filename" ⎭

Δ[DIRECT][,NUMBER][,HEX][,WAIT]
```

Punching a Library Module:

```
                       ┌                        ┐           ┌            ┐
PUNCHΔMODULE=modulename│,TYPE= { module-type }  │,FILENAME= { filename   }
                       │       { S           }  │           { 'filename' }
                       └                        ┘           { "filename" }

 [,RDPASS=password],VSN=volume┌              ┐
                              │,COPIES= { n }│Δ[DIRECT][,WAIT]
                              │         { 1 }│
                              └              ┘
```

Punching a MIRAM File:

```
                                                                  ┌              ┐
PUNCHΔFILENAME= { filename   } [,RDPASS=password],VSN=volume│,KEYNO= { n }│
                { 'filename' }                               │        { 0 }│
                { "filename" }                               └              ┘

 ┌              ┐┌                       ┐
 │,COPIES= { n }││,DEVICE= { did      }  │Δ[DIRECT][,WAIT]
 │         { 1 }││         { DISKETTE }  │
 └              ┘│         { DISK     }  │
                 └                       ┘
```

Punching a Spool File:

```
                       ┌            ┐┌                          ┐
PUNCHΔ[JOB=jobname]│,HOLD= { L }││,FILENAME= { filename   }│[,ACCT=acct]
                       │       { N }││           { 'filename' }│
                       │       { Y }││           { "filename" }│
                       └            ┘└                          ┘

                  ┌               ┐┌              ┐┌            ┐
 ,QUEUE= { LOG   }│,ALL= { YES }  ││,COPIES= { n }││,SKIP= { n }│Δ[DIRECT][,WAIT]
         { PRINT }│      { NO  }  ││         { 1 }││       { 0 }│
         { PUNCH }└               ┘└              ┘└            ┘
         { RDR   }
```

Punching a Tape File:

```
PUNCHΔ┌FILENAME= ⎧ filename   ⎫┐[,RDPASS=password],VSN=volume
      │          ⎨ 'filename' ⎬│
      │          ⎩ "filename" ⎭│
      └                        ┘

   ,DEVICE= ⎧did ⎫ ┌,BKNO= ⎧YES⎫┐Δ[DIRECT][,WAIT]
            ⎩TAPE⎭ │       ⎩NO ⎭│
                   └            ┘
```

Punching a Unit Record File:

```
PUNCHΔDEVICE= ⎧did     ⎫ ,FILENAME= ⎧filename  ⎫ ,VSN=volumeΔ[DIRECT][,WAIT]
              ⎨DISKETTE⎬            ⎨'filename'⎬
              ⎩RDR     ⎭            ⎩"filename"⎭
```

```
REBUILD
```

```
RECALLΔ ⎧LASTΔnn             ⎫
        ⎩hh:mm:ss-hh:mm:ss   ⎭
```

```
RECOVERΔMODULE=modulename┌,TYPE= ⎧module-type⎫┐,FILENAME= ⎧filename  ⎫
                         │       ⎩S          ⎭│           ⎨'filename'⎬
                         └                    ┘           ⎩"filename"⎭
   [,RDPASS-password][,WRPASS=password],VSN=volume
```

```
REMARKΔtext
```

```
RESUME
```

```
RPΔ[function-code][,ACCT=acctno][,BNUMB=binary-jobno][,CART=cartridge-name]
   [,FILE=filename][,FORM=formname][,JOB=jobname]
```

---

continued

Punching a Unit Record File: (cont.)

```
RUN {([did],label)} Δ[jobname][(new-name)] [{ :alt-filename                                    }]
    {(RDR,label)  }                        [{ : (alt-filename, {RES})                          }]
                                           [{                  {RUN}                           }]
                                           [{                  {vsn}                           }]
                                           [{                                                  }]
                                           [{ : (alt-filename, [{RES}],read-pass)              }]
                                           [{                  [{RUN}]                         }]
                                           [{                  [{vsn}]                         }]

   [,{PRE }][time][+{d1}][,key-1=val-1,...,key-n=val-n]
   [ {HIGH}]      [ { .}]
   [ {NOR }]      [ { .}]
   [ {LOW }]      [ { .}]
                  [ {d9}]
```

```
RVΔjobname[(new-name)][{ :alt-filename                         }][,{PRE }]
                      [{ : (alt-filename, {RES})               }][ {HIGH}]
                      [{                  {RUN}                }][ {NOR }]
                      [{                  {vsn}                }][ {LOW }]
                      [{                                       }]
                      [{ : (alt-filename, [{RES}],read-pass)   }]
                      [{                  [{RUN}]              }]
                      [{                  [{vsn}]              }]

   [ time][+{d1}][,key-1=val-1,...,key-n=val-n]
          [ { .}]
          [ { .}]
          [ { .}]
          [ {d9}]
```

continued

Punching a Unit Record File: (cont.)

```
SI ⎧([did],label)⎫ Δ[jobname][(new-name)] ⎡⎧ :alt-filename                              ⎫⎤
   ⎩(RDR,label)  ⎭                        ⎢⎪ : ⎛alt-filename, ⎧RES⎫⎞                    ⎪⎥
                                          ⎢⎪   ⎜              ⎨RUN⎬⎟                    ⎪⎥
                                          ⎢⎨   ⎝              ⎩vsn⎭⎠                    ⎬⎥
                                          ⎢⎪                                            ⎪⎥
                                          ⎢⎪ : ⎛alt-filename, ⎡⎧RES⎫⎤,read-pass⎞        ⎪⎥
                                          ⎢⎪   ⎜              ⎢⎨RUN⎬⎥          ⎟        ⎪⎥
                                          ⎣⎩   ⎝              ⎣⎩vsn⎭⎦          ⎠        ⎭⎦

⎡,⎧PRE ⎫⎤[,time]⎡+⎧d1⎫⎤
⎢ ⎪HIGH⎪⎥       ⎢ ⎪ .⎪⎥
⎢ ⎨NOR ⎬⎥       ⎢ ⎨ .⎬⎥
⎣ ⎩LOW ⎭⎦       ⎢ ⎪ .⎪⎥
                ⎣ ⎩d9⎭⎦
```

```
SCΔjobname[(new-name)] ⎡⎧ :alt-filename                              ⎫⎤ ⎡⎧PRE ⎫⎤[,time]
                       ⎢⎪ : ⎛alt-filename, ⎧RES⎫⎞                    ⎪⎥ ⎢⎪HIGH⎪⎥
                       ⎢⎪   ⎜              ⎨RUN⎬⎟                    ⎪⎥ ⎢⎨NOR ⎬⎥
                       ⎢⎨   ⎝              ⎩vsn⎭⎠                    ⎬⎥ ⎣⎩LOW ⎭⎦
                       ⎢⎪                                            ⎪⎥
                       ⎢⎪ : ⎛alt-filename, ⎡⎧RES⎫⎤,read-pass⎞        ⎪⎥
                       ⎢⎪   ⎜              ⎢⎨RUN⎬⎥          ⎟        ⎪⎥
                       ⎣⎩   ⎝              ⎣⎩vsn⎭⎦          ⎠        ⎭⎦

 ⎡+⎧d1⎫⎤
 ⎢ ⎪ .⎪⎥
 ⎢ ⎨ .⎬⎥
 ⎢ ⎪ .⎪⎥
 ⎣ ⎩d9⎭⎦
```

```
SCREENΔ⎡,⎧SCROLL⎫⎤⎡,⎧UPPER⎫⎤⎡,XMIT=⎧VAR ⎫⎤⎡,XFER=⎧VAR ⎫⎤⎡,SPEED=⎧9600⎫⎤
       ⎢ ⎪ROLL  ⎪⎥⎣ ⎩LOWER⎭⎦⎢      ⎨CHAN⎬⎥⎢      ⎨CHAN⎬⎥⎢       ⎪4800⎪⎥
       ⎢ ⎨NP    ⎬⎥         ⎣      ⎩ALL ⎭⎦⎣      ⎩ALL ⎭⎦⎢       ⎪2400⎪⎥
       ⎢ ⎪WRAP  ⎪⎥                                       ⎢       ⎨1200⎬⎥
       ⎣ ⎩NOROLL⎭⎦                                       ⎢       ⎪600 ⎪⎥
                                                         ⎣       ⎩300 ⎭⎦

⎡,SPACEBAR=⎧DESTRUCT   ⎫⎤⎡,LINES=⎧24⎫⎤⎡,KEYBOARD=⎧STANDARD⎫⎤⎡,INTENSITY=⎧NORMAL ⎫⎤
⎣          ⎩NONDESTRUCT⎭⎦⎣       ⎩12⎭⎦⎣          ⎩KATAKANA⎭⎦⎢           ⎨LOW    ⎬⎥
                                                              ⎣           ⎩REVERSE⎭⎦
```

continued

Punching a Unit Record File: (cont.)

```
[,LOG= {ALL     }][, {CENTRAL}][, {NONBURST}][, {CONTINUOUS}][SI= {TOP   }]
[      {COMMANDS}][  {WKSTN  }][  {BURST   }][  {PAGE      }][    {BOTTOM}]
```

```
STATUSΔ[ TERMINALS ]
       [ RESOURCES ]
       [ JOBS      ]
       [ FUNCTIONS ]
       [ VOLUMES   ]
       [ LIMITS    ]
```

```
STOPΔjobname
```

```
TELLΔ[{user-id},]'text'
     [{ALL    } ]
```

```
ULDΔ,filename,vsn,SIZE=nΔ[{PRINT  }Δ{SCRATCH}]
                         [{NOPRINT} {  SAVE }]
```

```
UNLOAD
```

```
VTOCΔ['file-prefix',]VSN=volumeΔ[FREE]
```

Appendix C
Sample Workstation Sessions

C.1. General

This appendix contains sample workstation sessions. These "sessions" consist of the interactive command you would use to accomplish different system jobs. Each session is complete with all commands necessary, beginning with the LOGON command and ending with the LOGOFF command. They are included to give you a better understanding of how the various interactive commands work together. Two of the sample sessions perform utility tasks, or "system housekeeping" chores. Another runs a user job, while the last initializes the general editor and uses it to make corrections to some data in a file.

In the sample sessions, the only messages shown are those that directly affect the progress of the session and any output generated by commands.

C.2. A Session to Make Punched Card Copies of a Module

```
 1.   LOGON USERA1,DEV4,SECRET,BULLETIN=NO,
 2.   11 LOGON030 LOGON ACCEPTED
 3.   VTOC VSN=PAY001
 4.   12 VTOC030    FILENAME   TYPE  EXT  CYL   %DIR   %DATA   %THIRD  AVAIL
 5.   13 VTOC030 $VTOC        MIRAM 001  001
 6.   14 VTOC030 FICACOMP     SAT   001  002    55     90        0      50
 7.   15 VTOC030 CHECKWRIT    SAT   001  003    40     87        0     100
 8.   16 VTOC030 PAYREP       SAT   001  003    60     90        0     150
 9.   17 VTOC030 TOTAL FREE CYLINDERS 392   TRACKS 000
10.   FST FILENAME=CHECKWRIT,VSN=PAY001
11.   18 FSTAT030   S - PLANTCK      S - OFFCK      S - DIVCK
12.   19 FSTAT030   S - RETIRCK      S - REDEVCK    S - VACCK
13.   TEL $Y$CON,'PUT CARDS IN PUNCH PUNCHING 2 DECKS NOW'
14.   20 PUNCH030 PUN MODULE=RETIRCK,TYPE=S,FILENAME=CHECKWRIT,VSN=PAY001,COPIES=2
15.   IS90   PUNCH COMMAND TERMINATED NORMALLY
16.   LOGOFF
```

In line 1, we log on to the system with the user-id USER1A, the account number DEV4, and the password SECRET. We do not specify an execution profile. By specifying BULLETIN=NO, we have caused the system bulletin not to be displayed when the LOGON command is accepted.

Line 3 shows a VTOC command requesting display of the volume table of contents (VTOC) of volume PAY001. Lines 4 through 9 show the VTOC display for volume PAY001. Of the files listed, we are interested in CHECKWRIT. Line 10 shows an FSTATUS command to list the modules present in the file CHECKWRIT. Notice that we abbreviated FSTATUS. The command executed satisfactorily because we entered a sufficient portion of the command to enable the system to distinguish it. Lines 11 and 12 show the FSTATUS display of the modules in CHECKWRIT. Now, we want to make two punched card copies of RETIRCK. Line 13 shows a TELL command informing the system operator to place cards in the card punch so that the copies may be made. Line 14 shows the PUNCH command, which will make our copies. Line 15 shows the message that is displayed when the PUNCH command has completed the two copies. You then log off the system with the LOGOFF command and pick up the punched cards at the computer site.

C.3. A Session to Run a User Job

```
1.    LOGON USER34,4567,BULLETIN=NO
2.    11 LOGON030 LOGON ACCEPTED
3.    TEL 'MOUNT D00026'
4.    RV COMPILE:(USERLIB,D00026)
5.    DI JS,COMPILE
6.    12 DI030     COMPILE   NOT YET SCHEDULED - INSUFFICIENT MAIN STORAGE
7.    DE JBQ,COMPILE
8.    LOGOFF
```

In line 1, we log on to the system with the user-id USER34 and the account number 4567. No password or execution profile is entered, but we do specify that the system bulletin is not to be displayed. In line 3, we tell the system operator to mount disk volume D00026. We do this because in line 4, we enter an RV command to run a job named COMPILE, residing in a library file named USERLIB, on volume D00026. After a while, we decide to check on the progress of COMPILE and enter a DISPLAY JS command to obtain the status of compile (line 5). Line 6 shows the message produced by the DI JS command, showing that COMPILE has not been scheduled, due to insufficient main storage. Being pressed for time, we decide not to wait any longer to execute COMPILE and, in line 7, enter a DELETE JBQ command to remove COMPILE from the scheduling queue. COMPILE will not execute. In line 8 we log off the system.

C.4. A Session to Use the General Editor

```
 1.   LOGON BILLM
 2.   EDT
 3.         1.0000 @READ  FILENAME=NEWMEMBERS,RDPASS=RDR,VSN=D00029
 4.         1.0000 @PRINT 1:3
 5.         1.0000 DAVID R. MAST
 6.         2.0000 ANN SMITH
 7.         3.0000 T. AARON WALKER
 8.         4.0000 @CHANGE 'T.' TO 'TIMOTHY'
 9.         4.0000 @ON 2 INSERT 'MARY'
10.         4.0000 @DELETE 1
11.         4.0000 @PRINT 1:3
12.         2.0000 MARYANN SMITH
13.         3.0000 TIMOTHY AARON WALKER
14.         4.0000 @WRITE FILENAME=NEWMEMBERS,WRPASS=LKT,VSN=D00029,INIT=YES
15.         4.0000 @HALT
16.   LOGOFF
```

In line 1, we log on with the user-id BILLM, and no account number, password, or execution profile. Since we did not specify that we do not want to see the system bulletin, it will be displayed. In line 2, we initialize the general editor through the EDT command. Line 3 causes a copy of the file NEWMEMBERS to be read into the workspace file. In line 4, we request that lines 1 through 3 of the workspace file be displayed. Lines 5, 6, and 7 display lines 1 through 3 of the workspace file. In line 8, we begin to use the editor to make changes to the file, in this line, changing the T of T. AARON WALKER to TIMOTHY. Line 9 causes MARY to be added to ANN in line 2 of the workspace file, and line 10 deletes line 1 of the workspace file. In line 11, we are displaying the corrections we have made, checking them to make sure we did them correctly. Lines 12 and 13 show the corrected lines. In line 14, we are writing a copy of the workspace file back to the original file. The INIT=YES parameter causes the workspace copy to overwrite the original file, causing the changes we made to be included. Line 15 terminates the general editor and, in line 16, we log off the system.

C.5. A Session to Erase Obsolete Files

```
 1.    LOGON USER10,ED06,36RACD
 2.    11 LOGON030 LOGON ACCEPTED
 3.    STATUS VOLUMES
 4.    12 STATU030    D-REL070    D-ACTPAY   D-WORK01
 5.    TEL 'MOUNT DISK VOLUME PAYWK1'
 6.    13 TELL030    -CONS-: 'VOLUME PAYWK1 MOUNTED'
 7.    VTOC VSN=PAYWK1
 8.    14 VTOC030   FILENAME  TYPE  EXT  CYL   %DIR   %DATA   %THIRD  AVAIL.
 9.    15 VTOC030 PAYFIC31880  MIRAM 002  007     50     87        0     90
10.    16 VTOC030 PAYBND31880  MIRAM 001  005     35     75        0     60
11.    17 VTOC030 PAYCHK31880  MIRAM 001  006     47     90        0     15
12.    18 VTOC030   TOTAL FREE CYLINDERS 382 TRACKS 000
13.    ER FILENAME=PAYFIC31880,VSN=PAYWK1
14.    19?ERASE030 IS51 ERASING ENTIRE FILE,PROCEED? (Y,N)
15.    19 ERASE030    Y
16.    20 ERASE030 IS90 ERASE COMMAND TERMINATED NORMALLY
17.    LOGOFF
```

Line 1 logs us on with the user-id USER10, the account number ED06, the password 36RACD. We want to find out what volumes are currently mounted on the system, so in line 3 we enter the STATUS command with the VOLUMES parameter. Line 4 shows the display produced by the STATUS command. Since the volume we want to work with is not currently mounted, in line 5, we send a message to the system operator, directing him to mount the volume we want. In line 6, we receive the reply that the volume is mounted. In line 7, we perform a VTOC command on the volume just mounted, and discover, in lines 8 through 12, that there are three files on the volume. Notice that each file name has a 5-digit number, this number is a calendar date, indicating when the file was created. We decide that the file PAYFIC31880 is obsolete, and we want to erase it. We enter the ERASE command on line 13. When you enter the ERASE command to erase an entire file, you receive the message shown on line 14. This helps prevent accidental erasure of files. We enter Y on line 15 and the command is executed. Line 16 shows the message you receive upon successful completion of the command. In line 17, we log off.

Appendix D
Positional Format for File Parameters

Certain file parameters may be entered in a *positional* format, instead of using keywords. In a positional format, only the actual parameters are entered; keywords are not used to identify them.

Parameters are identified to the system by their *position* in the parameter string. The positional parameters are separated from each other by commas, and from the command with which they are associated by a space. Four parameters may be entered in the positional format; module name, file name with read and write passwords, volume serial number, and module type. Table D-1 equates the positional parameters to their keyword equivalents:

Table D-1. Positional and Keyword Parameters

Positional	Keyword
module	MODULE=modulename
filename 'filename' "filename"	FILENAME=filename 'filename' "filename"
readpass/writepass	RDPASS=password WRPASS=password
volume	VSN=volume
type	TYPE=moduletype

Positional Format

The general format for positional file parameters is as follows:

```
                 ┌                                                     ┐
[modulename],    │ ⎧ filename   ⎫ [([readpass][/writepass])]          │,[volume],[type]
                 │ ⎨ 'filename' ⎬                                      │
                 │ ⎩ "filename" ⎭                                      │
                 └                                                     ┘
```

If, in entering a command, you use *both* positional and keyword parameters, you must enter the positional parameters *first*, with the keyword parameters following the *last* positional parameter.

The positional parameters *must* be entered in the order shown, or the command will be rejected. If a positional parameter is optional in a command and you do not use it, you must enter a comma in its place in the parameter string. If you do not enter a module name but do enter a file name and volume serial number, you must enclose the file name in quotation marks ("...") or enter a leading comma (comma *before* the file name). The read and write passwords must be entered in parentheses. If both are entered, the read password must be entered first, followed by a slash (/) and then the write password. If both are entered, they must both be enclosed in one set of parentheses. No command is entered between the file name and passwords.

The following is an example of a positional parameter string:

```
PAYJOB1,PAYFILE(SECRET),ABC466,S
```

This example shows a source module (S) named PAYJOB1, residing in a file named PAYFILE, located on a volume with the volume serial number ABC466. The read password for PAYFILE is SECRET.

Note: *If the read and write passwords are the same, specifying the read password alone allows both read and write access to the file.*

But entering:

```
PAYJOB1,PAYFILE(SECRET/),ABC466,S
```

will not allow write access to the file, even if the write password is SECRET.

The following is an example of a positional parameter string in which no module name is entered.

```
"PAYROLL",ABC466
```

In this example, only the file name, PAYROLL, and the volume serial number, ABC466, are given. Therefore, the file name is enclosed in quotation marks. Note also that no password is given.

The previous example could also be written as follows:

```
,PAYROLL,ABC466
```

Appendix E
Function Key Summary

Table E-1 provides a summary of the function keys used by interactive services and the various interactive facilities.

Table E-1. Function Key Summary (cont.)

Software Component	Key	Function
Interactive services	F15	Informs the system you have no more data to input from the workstation (end of file)
	F17	Temporarily halts the workstation display (See F19.)
	F19	Restarts workstation display after it has been temporarily stopped using F17 or when the screen is full of data
General editor	F1	Suppresses any printing options associated with a command (Same as F18)
	F2	Terminates processing of a command
	F3	Displays a screen showing the parameters on the @SET directive, or those that make up your EDT environment. F3 is the same as issuing the PARAMS screen command.
	F4	Displays a free-form screen through which you can switch to block mode for entering multiple commands or data. F4 is the same as issuing the BLOCK screen command.
	F5	Displays free-form screens, showing the EDT work-space file, where you can update lines or simply view them. F5 is the same as issuing the ROLL screen command.
	F6	Displays help screens for any EDT error messages. F6 is the same as issuing the HELP screen command.
	F12	Shows a previously displayed additional help screen for a specific command when that command requires several help screens to fully describe it.

continued

Table E-1. Function Key Summary Key Summary (cont.)

Software Component	Key	Function
General editor (cont.)	F13	Displays the EDT command menu screen and help screens for any of the EDT commands (that is, EDT commands, modifiers, directives, procedure file commands, variables, and screen commands). F13 is the same as issuing the PROMPT screen command. From a help screen, F13 also lets you see subsequent help screens needed to fully describe the command.
	F14	Returns you to the point in your EDT session where you originally entered a screen command. F14 is the same as issuing the RESTORE screen command.
	F15	Recognized as EOF indicator. Halts an EDT session run in batch mode or produces an error message in interactive mode.
	F18	Suppresses printing option associated with a command. (Same as F1)
	F19	Restarts workstation display after it has been temporarily stopped using F17 or when the screen is full of data.
Screen format services	F1	Returns the screen format generator to the HOME screen. Returning home deletes all work done up to that point.
	F5	Breakpoints the spool file to a printer. Records currently in the spooled printer output are directed to a printer (pending an available device). Records added to the spool file after the breakpoint are held until a subsequent breakpoint is requested or until the end of the job.
	F13	Displays a HELP screen appropriate to the step you're at when generating a screen format (See F14).
	F14	Removes the HELP screen displayed by using F13; returns the screen format generator to the point it was at before display of the HELP screen.
	F15	Indicates end of input data.
	F16	Indicates input data cannot be entered properly.

continued

Table E-1. **Function Key Summary** (cont.)

Software Component	Key	Function
	F20	Restores the screen to its original contents for the current pass if it has inadvertently been destroyed.
BASIC	F1	Pauses or terminates execution of a BASIC program. When no I/O operation is in progress, the system displays the message: EXECUTION PAUSED AT LINE xxxx CONTINUE (Y,N)? Key in Y to continue (resume) execution. Key in N to terminate the program. ■ If a BASIC program is requesting output, you must press XMIT after pressing F1 to display the above message. ■ If the BASIC program is sending output, the workstation screen must be full of data for F1 to be recognized. Press F19 to display the above message.
	F19	See F1.
ESCORT	F1	Signals the end of input and returns to master menu. (Used only with the structure processor)
	F2	Cancels display output. (Used only with the structure processor)
	F3	Cancels the current screen and returns to the previous screen. (Used only for program and tutorial modes)
	F4	■ Structure processor: aborts structure and returns to menu ■ Program mode: ends free-form input and returns to previous menu ■ Run-time processor: terminates program and returns to caller

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