



**NOS 1.0
OPERATOR'S GUIDE**

**CONTROL DATA®
CYBER 170 SERIES
MODELS 172, 173, 174, 175
CYBER 70 SERIES
MODELS 72, 73, 74
6000 SERIES
COMPUTER SYSTEMS**

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COMPUTER SYSTEMS

PREFACE

This manual contains information and procedures necessary to establish and control operation of a CONTROL DATA® Network Operating System (NOS) Version 1.0 and is intended for use by the central site (system) operator. The NOS system was developed by Control Data Corporation to provide network capabilities for time-sharing and transaction processing, in addition to local and remote batch processing on CDC® CYBER 170 Series Model 172, 173, 174, and 175 Computer Systems, CDC® CYBER 70 Series Model 72, 73, and 74 Computer Systems, and CDC® 6000 Series Computer Systems.

The operator is assumed to be familiar with the CDC CYBER 170, CDC CYBER 70, or 6000 Series Computer Systems and with operating system concepts in general.

Operators with limited or no previous NOS experience are encouraged to direct their initial attention to the following sections of this manual.

- | | |
|------------|--|
| Section 1 | Introduction |
| Section 2 | Deadstart: This section describes the process by which the NOS system is made operational and ready to process user jobs. |
| Section 3 | Operation Under DSD Control: This section provides information concerning console operation and the DSD commands that form the primary operator interface to the NOS system. Notes of caution are included with the description of commands that should be used with extreme care or at the direction of the site analyst. |
| Section 4 | DSD Displays: This section contains a description and illustration of the DSD displays that may be brought to the console screens to monitor system operation. |
| Appendix B | Operator Messages: This section contains an alphabetical listing of the status and error messages that are issued by the system. |
| Appendix D | Peripheral Equipment Operation: This section contains information concerning the manual operation of each peripheral device associated with the NOS system. |

Since the job requirements of the system operator may vary from one installation to another, this manual should be used in conjunction with established policies and procedures provided by the installation.

Although all information contained in this manual is considered relevant and necessary for a system operator, a substantial amount of the information is directed toward an experienced operator thoroughly familiar with the subject and its application with respect to system operation. For example, before use of the commands described in section 8, Operation Under DIS Control, is permitted, an installation may require that the operator have an overall understanding of NOS system operation. Another installation may specify which DIS commands the operator can use, if any. This may also apply to the procedures described in section 5, Permanent File Utilities, section 6, Queue/Dayfile Utilities, and section 7, System Utility Operation. Generally, the

procedures and commands described in sections 5, 6, and 7 are used at predetermined intervals, depending upon the installation and at the direction of the site analyst.

The following manuals contain additional information about the Network Operating System that may prove useful to the system operator.

<u>Control Data Publication</u>	<u>Publication No.</u>
CDC CYBER 170 Computer Systems Reference Manual	60420000
CDC CYBER 70/Model 72 Computer System Reference Manual	60347000
CDC CYBER 70/Model 73 Computer System Reference Manual	60347200
CDC CYBER 70/Model 74 Computer System Reference Manual	60347400
CDC 6400/6500/6600 Computer Systems Reference Manual	60100000
NOS 1.0 Reference Manual Volume 1	60435400
NOS 1.0 Reference Manual Volume 2	60445300
NOS 1.0 Installation Handbook	60435700
NOS 1.0 Time-Sharing User's Reference Manual	60435500
NOS 1.0 Instant Manual	60436000
TRANEX Reference Manual	60407900
TRANEX Operator's Guide Addendum	60408000

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

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INTRODUCTION

1

The Network Operating System (NOS) provides four types of job processing.

- Local batch processing; jobs can be entered and processed at the central site using all of the central site peripheral equipment attached to the computer.
- Remote batch processing; jobs can be submitted from remotely located 200 User Terminals or 731-12/732-12 Remote Batch Terminals.
- Deferred batch processing; jobs entered from an interactive terminal can be submitted to the batch queue for processing; their output can be routed to user-specified peripheral equipment.
- Interactive terminal processing; jobs can be entered from an ASCII code or correspondence code compatible terminal.

SYSTEM CONFIGURATION

NOS supports the following equipment. The specific configuration may vary, but consists of elements of the following equipment.

- Peripheral processor units (PPUs) - 10, 14, 17, and 20 PPU configurations of CDC CYBER 170/Model 173, 174, and 175 computers (10 PPU's only for the Model 172 computer) and CDC CYBER 70/Model 72, 73, and 74 computers; 7, 8, 9, 10, and 20 PPU configurations of 6000 series computers.
- Central exchange jump/monitor exchange jump (CEJ/MEJ) - All of the CDC CYBER 170/Model 172, 173, 174, and 175 computers and CDC CYBER 70/Model 72, 73, and 74 computers are equipped with CEJ/MEJ. It is an option on the 6000 series computers. This option improves job performance and should be used if it is available.
- Display console - Basic equipment for all CDC CYBER 170/Model 172, 173, 174, and 175 computers includes a single screen display console. Two single screen consoles are available optionally. CDC CYBER 70/Model 72, 73, and 74 computers and 6000 series computers use the 6612 dual screen display console.
- Mass storage - a minimum of 60 million characters of mass storage on any of the following devices.
 - Extended Core Storage (ECS)
 - 841 Multiple Disk Drive
 - 844 Disk Storage Subsystem

A dedicated permanent file device is recommended in addition to system mass storage.

- Peripheral equipment - any of several combinations of the following peripheral equipment.
 - 512 and 580 Line Printers
 - 405 Card Reader
 - 415 Card Punch
 - 657, 659, 667, and 669 Magnetic Tape Units
 - 6671 Multiplexers for communication with 200 User Terminals and 731-12/732-12 Remote Batch Terminals
 - 6671 or 6676 Multiplexers for communication with interactive terminals
- Distributive data path (DDP) - The DDP option enables PPU's to read and write ECS directly rather than use the normal indirect transfers via central memory.

NOS gives the operator considerable latitude in controlling performance of the overall system, yet it can proceed with very little operator activity. Efficiency of the entire system can be increased significantly by a knowledgeable operator.

The operator console is used for communication between the operator and the computer system. Both NOS and the programs running under control of NOS use the display screen to bring information to the attention of the operator. The operator responds to or otherwise instructs the operating system by entering information via the console keyboard.

Two NOS routines, DSD and DIS, provide the software interface between the console hardware and other internal software. Their function is to maintain a current display of system and job status and to process commands the operator types at the keyboard. DSD is the system display routine; information pertaining to all jobs appears on the screen. DIS is the job display routine; the screen shows data from a single job only. DSD has control of the console until the operator brings in DIS.

At all times DSD occupies PP1, one of the 7 to 20 peripheral processor units in the system. PP0 always contains the system monitor routine MTR that oversees all NOS activities. DIS resides in a PP assigned by monitor at the time it is called.

Under DSD, the normal operating mode, the operator can address the system or any of the jobs under system control. Once a particular job begins execution, however, operator intervention is limited to responding to job requests for equipment assignment or other actions, changing priority or field length, and stopping execution permanently or temporarily.

In contrast, DIS operating mode gives the operator more control of job execution. Operator action is required to advance each control statement in the job. Since the operator can add control statement instructions from the keyboard, the job need not execute exactly as it entered the system. Commands to DIS include those that allow changes in register contents shown in the exchange jump package, as well as those that control such items as field length or time limit.

Operators can use the DIS capability for entering control statements to perform utility tasks or dumping permanent files. DIS is used most often by system analysts. Section 8 details procedures for using DIS.

Deadstart is the process by which the system is made operational and ready to process jobs. Under normal circumstances, this is a function performed by the system operator. System deadstart can be a fully automatic procedure or it can involve considerable operator intervention. It is assumed that a deadstart tape exists, which is configured to meet site requirements. The deadstart tape is a reel of magnetic tape containing the programs which constitute the operating system and its product set members (such as BASIC, FORTRAN, COMPASS, etc.). In addition, the deadstart tape contains programs necessary to establish the system and its product set on the system equipment as well as maintenance routines used to test the condition of certain system equipment. The deadstart tape is not dependent upon a specific equipment configuration. That is, the same deadstart tape can be used for any supported equipment configuration.

Procedures for deadstart depend upon the tape unit on which the deadstart tape is mounted. If a 667 or 669 magnetic tape unit is used to deadstart, special procedures (coldstart and warmstart) must be followed. Coldstart requires a special card deck to load the magnetic tape controller controlware prior to the actual loading of the system. The warmstart procedure is used when the controlware has already been loaded and is functioning properly.

SUMMARY OF DEADSTART PROCEDURES

Generally, the following summaries are intended to provide a brief overview of the procedures necessary to deadstart. The more experienced operator may wish to use the appropriate summary as a checklist during deadstart. Detailed information concerning all phases of the deadstart process is provided throughout the remainder of this section. It is assumed that power is applied on all required equipment and that the equipment is functioning properly. If at any time loss of power or equipment failure is encountered, consult the site analyst or customer engineer. Note that the tape unit on which the deadstart tape is to be mounted must be on a channel without a PPU.

PROCEDURES USING 657 OR 659 TAPE UNITS

1. Ensure that required mass storage devices have packs mounted and/or are available.
2. Mount the deadstart tape (refer to appendix D for operating instructions).
 - Check to ensure that write enable ring is not on reel.
 - Mount the tape, select the correct density, and ready the unit.
3. Set the deadstart panel (refer to Setting the Deadstart Panel).
 - Select the correct deadstart function.
 - Select the correct CMRDECK.
 - Select the correct LIBDECK.
 - Select appropriate system devices unless CMRDECK and/or IPRDECK modification is to be performed.
 - All variable fields on the deadstart panel are indicated by blanks in the accompanying illustration. For reference, fill in blanks with values used most frequently.

1	111	101	—	—
2	111	111	—	—
3	—	000	00	—
4	111	111	—	—
5	000	000	001	000
6	111	111	—	—
7	001	100	000	000
10	111	100	—	—
11	111	001	—	—
12	110	100	000	000
13	—	—	—	—
14	—	—	—	—
15	000	000	000	000†
16	Not currently used. ††			
17	Not currently used. ††			
20	Not currently used. ††			

4. Activate the deadstart switch (refer to System Deadstart Procedures).
5. Initialize the system and initiate job processing (refer to Initializing the System and Initiating Job Processing).

PROCEDURES USING 667 OR 669 TAPE UNITS

Special procedures are needed when deadstarting from 667 or 669 magnetic tape units due to the necessity for loading the tape controller. The coldstart procedure is used to deadstart if the controller has not yet been loaded. A special program is required to read the magnetic tape controller controlware deck from the card reader, load it to the controller, and proceed with the loading of the deadstart tape. Warmstart is used for all subsequent deadstarts once the controlware has been loaded and is functioning properly.

It is advisable to reset the deadstart panel (refer to Setting the Deadstart Panel) for a warmstart immediately after a coldstart if the firmware has been loaded successfully. After initial loading of the controlware there is no reason to perform a coldstart again if the tape subsystem is operating correctly. This should be remembered particularly if the deadstart function performed is a maintenance deadstart (refer to Selecting the Deadstart Function). In this case, panel switches should be reset for warmstart before the deadstart switch is pressed again.

COLDSTART PROCEDURES

The following summary provides a brief overview of the procedures necessary to coldstart from a 667 or 669 magnetic tape unit. The operator may wish to use this as a checklist during coldstart and refer to the panel settings in step 3 for the appropriate variable fields. Note that the card reader and tape unit on which the deadstart tape is to be mounted must be on different channels. Neither the card reader nor the tape unit can be on a channel with a PPU.

1. Ensure that required mass storage devices have packs mounted and/or are available.
2. Mount the deadstart tape (refer to appendix D for operating instructions).
 - Check to ensure that write enable ring is not on reel.
 - Mount the tape and ready the unit.

† CDC CYBER 170 Series only.

†† Words 16, 17, and 20 of the CDC CYBER 170 Series deadstart panel are reserved for future use. Their settings have no effect on the deadstart process.

3. Set the deadstart panel for a coldstart (refer to Setting the Deadstart Panel).
 - Select the correct deadstart function.
 - Select the correct CMRDECK.
 - Select the correct LIBDECK.
 - Select appropriate system devices unless CMRDECK and/or IPRDECK modification is to be performed.

All fields on the deadstart panel which are variable for coldstart are indicated by blanks in the following illustration. For reference, fill in blanks with values used most frequently.

1	111	101	—	—
2	111	111	—	—
3	—	000	000	000
4	010	100	000	000
5	010	100	—	—
6	111	111	—	—
7	001	100	—	000
10	111	100	—	—
11	111	001	—	—
12	111	110	110	100
13	—	—	—	—
14	—	—	—	—
15	000	000	000	000†
16	Not currently used. ††			
17	Not currently used. ††			
20	Not currently used. ††			

4. Press the deadstart switch (refer to System Deadstart Procedures).
5. Insert card deck in card reader and activate card reader as follows:
 - Press MOTOR POWER.
 - Select AUTO MODE.
 - Press RELOAD MEMORY.
 - Press READY.
6. Initialize the system and initiate job processing (refer to Initializing the System and Initiating Job Processing).

WARMSTART PROCEDURES

The following summary provides a brief overview of the procedures necessary to warmstart from a 667 or 669 magnetic tape unit. The operator may wish to use this as a checklist during warmstart and refer to the panel settings in step 3 for the appropriate variable fields. Note that the tape unit on which the deadstart tape is to be mounted must be on a channel without a PPU.

† CDC CYBER 170 Series only.
 †† Words 16, 17, and 20 of the CDC CYBER 170 Series deadstart panel are reserved for future use. Their settings have no effect on the deadstart process.

1. Ensure that required mass storage devices have packs mounted and/or are available.
2. Mount the deadstart tape (refer to appendix D for operating instructions).
 - Check to ensure write enable ring is not on reel.
 - Mount the tape and ready the unit.
3. Set the deadstart panel for a warmstart (refer to Setting the Deadstart Panel).
 - Select the correct deadstart function.
 - Select the correct CMRDECK.
 - Select the correct LIBDECK.
 - Select appropriate system devices unless CMRDECK and/or IPRDECK modification is to be performed.

All fields on the deadstart panel which are variable for warmstart are indicated by blanks in the following illustration. For reference, fill in blanks with values used most frequently.

1	111	101	—	—
2	011	110	001	101
3	001	000	001	100
4	—	—	—	—
5	—	—	—	—
6	111	111	—	—
7	000	010	110	—
10	111	100	—	—
11	111	001	—	—
12	110	100	000	000
13	—	—	—	—
14	—	—	—	—
15	000	000	000	000†
16	Not currently used. ††			
17	Not currently used. ††			
20	Not currently used. ††			

4. Press the deadstart switch (refer to System Deadstart Procedures).
5. Initialize the system and initiate job processing (refer to Initializing the System and Initiating Job Processing).

† CDC CYBER 170 Series only.

†† Words 16, 17, and 20 of the CDC CYBER 170 Series deadstart panel are reserved for future use. Their settings have no effect on the deadstart process.

SETTING THE DEADSTART PANEL

The CDC CYBER 170 Series deadstart panel (Figure 2-1a) contains a 16 by 12 matrix of toggle switches. Its rows are numbered from 1 through 20 octal. The CDC CYBER 70 Series and 6000 Series deadstart panel (Figure 2-1b) is a 12 by 12 matrix containing rows numbered from 0001 through 0014 octal. Each row of switches represents a 12-bit PPU instruction word in the deadstart program. Thus, by setting these switches in a prescribed manner, the operator effectively creates the program necessary to deadstart. This program is subsequently loaded into PPU 0 memory and executed whenever the deadstart switch is activated. Words 16 through 20 on the CDC CYBER 170 Series deadstart panel are reserved for future use and their settings are ignored.

The function of the deadstart program is as follows:

- Identifies the tape unit, controller, and channel number to be used to access the deadstart tape (specified in words 0001 through 0011).
- Selects any deadstart options specified in words 0013 and 0014.
- Reads the first record from the deadstart tape (system tape preloader routine). The function of this routine is to initiate processing the remainder of the deadstart tape according to the options specified on the deadstart panel (words 0013 and 0014).

Deadstart panel settings depend upon the tape unit on which the deadstart tape is mounted. There are three possible panel settings. One setting is used with both 657 and 659 tape units, and two settings (coldstart and warmstart) for use with 667 and 669 tape units. However, any differences exist only in the first 12 words. Words 13 and 14 are described in a separate section (Setting Words 13 and 14) since they are not dependent upon the type of tape unit being used.

In the following illustrations of the deadstart panel, the switch positions indicated by a 1 (switch in up position) or a 0 (switch in down position) are mandatory settings. However, the switch positions for fields represented by alphabetic characters are determined by each installation. Each of these fields is described in the topics that follow. Space is provided at the beginning of this section (Summary of Procedures for Deadstart) to include these switch positions.

NOTE

Before activating the deadstart switch (on console or deadstart panel) ensure that the maintenance switch (labeled MODE in Figure 2-1b) on the deadstart panel is set to the LOAD position.

For CYBER 70 and 6000 series, the CEJ/MEJ key must be turned fully counterclockwise to enable CEJ/MEJ. The key is turned fully clockwise to disable CEJ/MEJ.

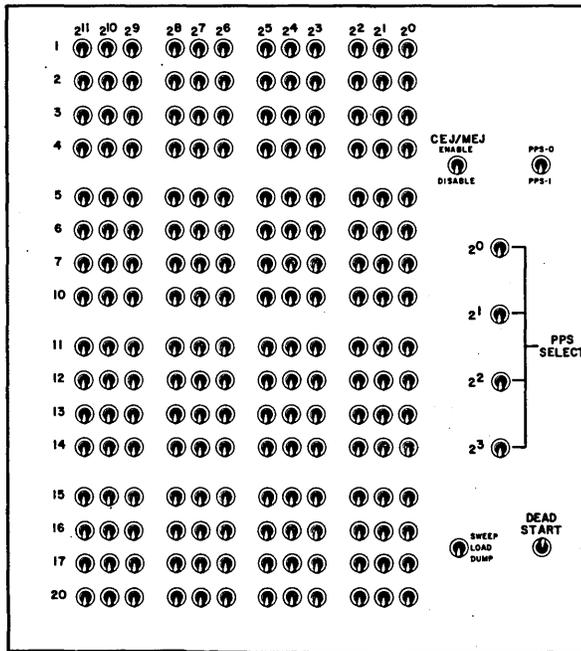


Figure 2-1a. CDC CYBER 170 Series Deadstart Panel

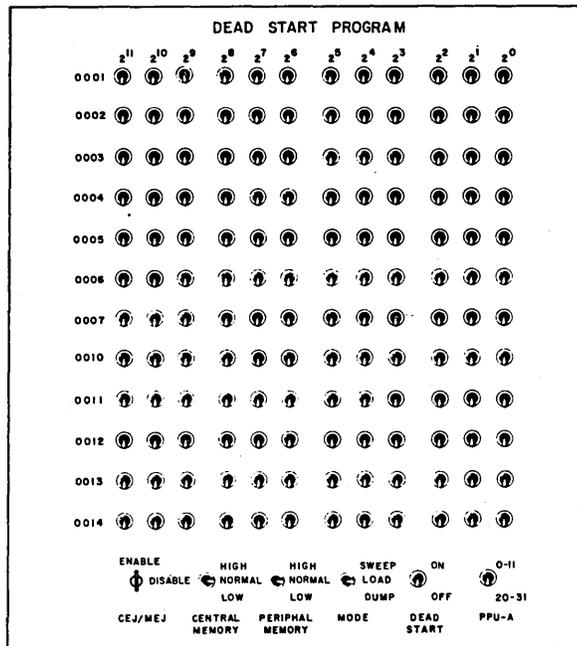


Figure 2-1b. CDC CYBER 70/6000 Series Deadstart Panel

PANEL SETTINGS FOR 657 OR 659 TAPE UNITS

The magnetic tape transport on which the deadstart tape is mounted, its associated controller, and the channel used to access this equipment is identified by setting the switches shown in the unshaded area of the deadstart panel illustrated.

1	111 101	ttt ttt	ttt ttt	Represents the channel number used to access the deadstart tape equipment.
2	111 111	ttt ttt		
3	eee 000 00u	uuu		
4	111 111	ttt ttt		
5	000 000 001 000		eee	Represents the tape controller number to which the tape unit is connected.
6	111 111	ttt ttt		
7	001 100 000 000			
10	111 100	ttt ttt		
11	111 001	ttt ttt	u uuu	Represents the physical unit number of the 657 or 659 magnetic tape unit on which the deadstart tape is mounted (number is indicated on selector switch at top of unit).
12	110 100 000 000			
13	www xxx xxx yyy			
14	rrr ppp sss sss			
15	000 000 000 000	†		
16	Not currently used. ††			
17	Not currently used. ††			
20	Not currently used. ††			

For example, assume that channel 13, tape controller 5, and tape unit 3 were to be used. In this case, the corresponding switches on the deadstart panel would be set as follows (1 indicates that switch is placed in up position):

```

ttt ttt 001 011
eee      101
u uuu   0  011
  
```

The numbers are set to their binary form as each switch represents one bit in a 12-bit PPU instruction word.

PANEL SETTINGS FOR 667 OR 669 TAPE UNITS

SETTING THE PANEL FOR COLDSTART

The specific function of the deadstart program during coldstart is as follows:

Identifies the controller and channel number used to access the card reader from which the controlware is to be read. Also specifies the channel and unit number of the tape unit on which the deadstart tape is mounted.

Selects any deadstart options specified in words 0013 and 0014.

Reads the controlware card deck. The function of this deck is to load the tape controller. Processing of the deadstart tape according to the options specified on the deadstart panel (words 0013 and 0014) is then initiated.

The equipment necessary for the devices used during coldstart is identified by setting the switches shown in the unshaded area of the deadstart panel illustrated. This includes the channel number and controller associated with the card reader and the channel and unit number of the tape unit.

† CDC CYBER 170 Series only.

†† Words 16, 17, and 20 of the CDC CYBER 170 Series deadstart panel are reserved for future use. Their settings have no effect on the deadstart process.

1	111	101	ttt	ttt
2	011	110	001	101
3	001	000	001	100
4	010	100	000	000
5	010	100	000	000
6	111	111	ttt	ttt
7	000	010	110	uuu
10	111	100	ttt	ttt
11	111	001	ttt	ttt
12	110	100	000	000
13	www	xxx	xxx	yyy
14	rrr	ppp	sss	sss
15	000	000	000	000
16	Not currently used. †			
17	Not currently used. ††			
20	Not currently used. ††			

ttt ttt

Represents the channel number used to access the deadstart tape equipment.

uuu

Represents the physical unit number of the 667 or 669 magnetic tape unit on which the deadstart tape is mounted.

The contents of words 0004 and 0005 differ if a 6681 or 6684 controller is on the channel used to access the deadstart tape. In this case, the following switch positions must be used.

4	111	111	ttt	ttt
5	010	001	000	000

The numbers are set to their binary form as each switch represents one bit in a 12-bit PPU instruction word.

Instructions for setting the remainder of the panel are given under Setting Words 13 and 14.

SETTING WORDS 13 AND 14

SELECTING THE DEADSTART FUNCTION

Generally, the term deadstart refers to the function performed after the deadstart switch is activated. There are two basic categories of deadstart functions that can be performed.

- System deadstart This is the process by which the system is made operational and ready to process jobs.
- Maintenance deadstart This function allows the system to be used to perform hardware or software maintenance tasks. Only one maintenance task can be selected at a time. In addition, processing of user jobs is not possible (system deadstart required).

The deadstart function to be performed is selected by setting the switches shown in the unshaded area of the deadstart panel illustrated.

13	www	xxx	xxx	yyy
14	rrr	ppp	sss	sss

yyy

Specifies deadstart function. Values 000, 001, 010, and 011 are valid (1 indicates switch is in up position). Refer to the following description for function associated with each value.

† CDC CYBER 170 Series only.

†† Words 16, 17, and 20 of the CDC CYBER 170 Series deadstart panel are reserved for future use. Their settings have no effect on the deadstart process.

<u>Value of yyy</u>	<u>Associated Function</u>
000	Selects automatic system deadstart. If system device is specified in word 14 (refer to Entering Word 14), deadstart proceeds automatically; operator intervention is not required unless an error status bit is set in a status/control register (CDC CYBER 170 Series only) or an error is detected during the memory confidence test. For complete information concerning automatic system deadstart, refer to the procedure described later in this section under System Deadstart Procedures.
001	Selects system deadstart with options displayed. When this function is selected, an options display appears on the left console screen and deadstart proceeds as directed by the operator. For complete information concerning system deadstart with options displayed, refer to the procedure described later in this section under System Deadstart Procedures.
010	Selects maintenance deadstart task that displays the contents of PPU 0 (zero) memory on the console screen. This function is generally used by the site analyst or customer engineer (CE) to enter sample PPU programs (for example, to test peripheral devices on the system). To perform another deadstart function, it is necessary to reset this field (yyy) on the deadstart panel and activate the deadstart switch.
011	Selects maintenance deadstart task to perform deadstart dump. This function allows the contents of PPU memory and/or central memory to be dumped to a specified line printer. Refer to section 3 in part II of the Installation Handbook for deadstart dump procedures. To perform another deadstart function, it is necessary to reset this field (yyy) on the deadstart panel and activate the deadstart switch.

During a system deadstart with options displayed (yyy=001 on deadstart panel), some of the options available are maintenance deadstart functions. Included are the maintenance functions described here (PPU 0 memory display and deadstart dump). When either of these options are selected via the deadstart panel switches (yyy), it is necessary to reset the switches in order to perform another deadstart function. However, when these functions are selected via the options display, it is not necessary to reset the deadstart panel to perform another deadstart function. Simply activate the deadstart switch and the options display reappears. Additional options can then be selected and/or the system deadstart can be performed. Refer to the procedure for system deadstart with options displayed for a description of the options available.

SELECTING THE CMRDECK

The equipment configuration to be used for system operations is defined by CMRDECK read from the deadstart tape. Up to 64 CMRDECKs can be included on the deadstart tape (numbered 0 through 63). This provides an installation with the ability to select one of several equipment configurations when the system is deadstarted. However, it is important to note that the CMRDECK to be used is only selected during a level 0 (initial) deadstart. Should it become necessary to perform a level 1, 2, or 3 (recovery) deadstart, the CMRDECK selected during the most recent level 0 deadstart must be used. Refer to the discussion under Entering Word 14 for information concerning the levels of deadstart.

The number of the CMRDECK to be used is selected by setting the switches shown in the unshaded area of the deadstart panel illustrated.

13	www xxx xxx yy	xxx xxx	Specifies the CMRDECK number (0 through 63) to be used.
14	rrr ppp sss sss		

For example, assume that CMRDECK number 0 is to be used to define the equipment configuration at deadstart. In this case, the corresponding switches on the deadstart panel would be set as follows (0 indicates that switch is placed in down position):

xxx xxx 000 000

It is not necessary to specify the CMRDECK on the deadstart panel if system deadstart with options displayed is selected in word 13 (yyy=001). In this case, the options provided allows the operator to specify the CMRDECK to be used from the console keyboard. In addition, values entered via the options display have precedence over those specified on the deadstart panel. For example, bits 3 through 8 of word 13 on the deadstart panel (xxx xxx) could be set to select the CMRDECK most frequently used by an installation. Another CMRDECK could then be selected when necessary via the options display during a level zero deadstart.

SELECTING THE LIBDECK

The residence of various system programs and the identification of some specific program formats are defined by a LIBDECK read from the deadstart tape. Up to eight LIBDECKs can be included on the deadstart tape (numbered 0 through 7). The number of the LIBDECK to be used may be selected by setting the switches for bits 9 through 11 of word 13 on the deadstart panel. However, the LIBDECK selection may also be defined in the CMRDECK being used. In this case, the LIBDECK selected in the CMRDECK takes precedence over that specified on the deadstart panel. Likewise, if a LIBDECK selection is not specified in the CMRDECK, the LIBDECK selected on the deadstart panel is used by default. This selection can only be made during a level 0 (initial) deadstart. Should it become necessary to perform a level 1, 2, or 3 (recovery) deadstart, the LIBDECK selected during the most recent level 0 deadstart must be used. Refer to the discussion under Entering Word 14 for information concerning levels of deadstart.

The number of the LIBDECK to be used by default (when selection is not specified in CMRDECK) is selected by setting the switches shown in the unshaded area of the deadstart panel illustrated.

13	www xxx xxx yy	www	Specifies the LIBDECK number (0 through 7) to be used unless otherwise specified in the CMRDECK being used.
14	rrr ppp sss sss		

For example, assume that LIBDECK number 0 is to be selected and that a LIBDECK selection is not specified in the CMRDECK being used. In this case, the corresponding switches on the deadstart panel would be set as follows (0 indicates that switch is placed in down position).

www 000

These switches would be set to 010 if LIBDECK number 2 were to be selected, and to 011 if LIBDECK number 3 were selected, etc.

ENTERING WORD 14

Setting the deadstart panel switches for word 14 has significance only when performing a system deadstart (refer to Selecting the Deadstart Function). Three unique fields exist that must be considered when entering word 14. The switches which represent these fields are shown in the area of the deadstart panel illustrated below.

14	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	sss sss	Specifies the mass storage devices on which the system library is to reside.
		ppp	Specifies the central processor control options.
		rrr	Specifies the level of system deadstart to be performed.

It is not necessary to enter word 14 on the deadstart panel if system deadstart with options displayed is selected in word 13 (yyy=001). In this case, the options provided allow the operator to enter all values for word 14 from the console keyboard. Values entered via the options display have precedence over those specified on the deadstart panel. For example, the switches for word 14 on the deadstart panel could be set to specify values most frequently used by an installation and then modified when necessary via the options display.

Individual descriptions of each field in word 14 are given in the following discussion. All valid switch positions are described. A 1 indicates that the corresponding switch is placed in the up position; a 0 indicates the down position.

14 Select System Device(s)

These switches (bits 0 through 5) correspond to the mass storage devices defined in the first six entries (ordinals 0 through 5) of the equipment status table (EST). Each switch placed in the up position specifies that the system library will reside on the corresponding mass storage device. If more than one device is specified, system efficiency can be greatly improved because more than one system file can then be accessed at the same time. However, all devices specified must be of the same type.

When it is desired to make modifications to the CMRDECK during deadstart, no system device can be specified on the deadstart panel (sss sss=000 000). In this case, a CMRDECK instruction display (CMRINST) appears on the console screen and provides the operator with all valid CMRDECK entries. One of these is the SYSTEM entry whereby any of the same type of mass storage devices assigned to the first 17₈ EST entries can be defined as system devices. A maximum of six system devices can be specified via the deadstart panel switches. For additional information concerning CMRDECK modification during deadstart, refer to System Deadstart Procedures described later in this section.

In summary, three opportunities exist for the operator to select the system device(s).

1. Place one or more of the six rightmost switches of word 14 on the deadstart panel (sss sss) in the up position.
2. Select option to enter word 14 via the options display (refer to description of Deadstart With Options Displayed later in this section).
3. Specify the SYSTEM entry when making CMRDECK modifications.

If the operator does not specify a system device, the system library will reside on the mass storage device assigned to the first entry (ordinal zero) of the EST by default.

14

rrr	ppp	sss	sss
-----	-----	-----	-----

Select Central Processor Options

Value of ppp
(bits 6-8)Description

- Bit 6 = 0 Indicates that CPU 0 (zero) is available in the system (switch in down position). This switch has significance only for dual CPU systems and is normally left in this position.
- = 1 Indicates that CPU 0 is not available in the system (switch in up position). On dual CPU systems, this allows use of the system when CPU 0 is down. However, if either CPU is disabled in a dual CPU system, detection of the compare move unit (CMU) is also disabled. Disabling CPU 1 (bit 7 placed in up position) on single CPU systems inhibits detection of the CMU. CPU 0 and CPU 1 should not be disabled simultaneously (bits 6 and 7 both placed in up position).
- Bit 7 = 0 Indicates the CPU 1 is available in the system (switch in down position). This switch has significance only for dual CPU systems and is normally left in this position. If bits 6 and 7 are both set to zero (switches in down position), the system will automatically determine if both CPUs are available and initialize accordingly.
- = 1 Indicates that CPU 1 is not available in the system (switch in up position). On dual CPU systems, this allows use of the system when CPU 1 is down. However, if either CPU is disabled in a dual CPU system, detection of the compare move unit (CMU) is also disabled. Disabling CPU 1 on single CPU systems inhibits detection of the CMU. CPU 0 and CPU 1 should not be disabled simultaneously (bits 6 and 7 both placed in up position).
- Bit 8 = 0 Indicates that CEJ/MEJ option is enabled (switch in down position).
- = 1 Disables CEJ/MEJ option (switch in up position). This is not recommended since the system will automatically determine if the CEJ/MEJ option is present and initialize accordingly. Thus, this switch should always be set to the down position (bit 8 = 0). System failure may result if the CEJ/MEJ option is present in the system and is disabled in this manner.
- If it is necessary to disable the CEJ/MEJ option for maintenance purposes, the switch labeled CEJ/MEJ on the deadstart panel should be used (refer to Figures 2-1a and 2-1b earlier in this section).

14

rrr	ppp	sss	sss
-----	-----	-----	-----

Select Deadstart Level

Value of rrr
(bits 9-11)Description

- 000 Indicates an initial or level 0 (zero) deadstart in which the system is loaded from the deadstart tape. This is not considered to be a recovery deadstart although permanent files, queue files (if the QPROTECT is enabled), and system dayfiles are recovered automatically. An attempt to recover these files is made on all levels of system deadstart. Level zero deadstart is normally specified under the following conditions.
- For the first deadstart following a period in which the system has been inoperative, or has been used for purposes other than NOS operations.

Value of rrr
(bits 9-11)

Description

- When a system malfunction has occurred and other levels of system deadstart prove ineffective.

If it becomes necessary to redeadstart the system (for example, due to system malfunction), it is recommended that a level 3 recovery deadstart be attempted. If level zero is selected, the system is reloaded from the deadstart tape. All permanent files, queue files (if QPROTECT is enabled), and system dayfiles are recovered. All central memory and PPU contents are destroyed by the memory confidence test.

001

Indicates a level 1 recovery deadstart whereby the system, all jobs, and all active files are recovered from checkpoint information on mass storage. Permanent files are also recovered. A level 1 recovery deadstart is normally performed following a system malfunction that destroys the contents of central memory. Level 1 recovery is effective only if the DSD command CHECK POINT SYSTEM (refer to section 3) has been issued prior to the system malfunction. In addition, if a significant amount of system activity has taken place since the last checkpoint was performed, the checkpoint information may no longer be reliable. In this case, it is recommended that a level zero (initial) deadstart be performed. It may be desirable to perform a level 1 recovery deadstart temporarily (where possible) in order to dump accounting information (refer to DSD command ACCOUNT in section 3).

Unless the operator is certain that the contents of central memory was destroyed by the system malfunction, he should always attempt to perform a level 3 recovery deadstart (rrr=011) before attempting level 1 recovery. Once level 1 recovery deadstart begins, all central memory and PPU contents are destroyed by the memory confidence test.

010

Indicates a level 2 recovery deadstart whereby all jobs and active files are recovered from checkpoint information on mass storage. However, no attempt is made to recover the system. Instead, the system is loaded from the deadstart tape as in level 0 deadstart. In all other respects, level 2 recovery deadstart is identical to that described for a level 1 recovery deadstart (refer to preceding description). Once level 2 recovery deadstart begins, all central memory and PPU contents are destroyed by the memory confidence test.

Level 2 recovery deadstart is normally used in system test situations and is not recommended for the normal production environment.

011

Indicates a level 3 recovery deadstart whereby all jobs, active files, and the system, with the exception of the library directory, are recovered from central memory tables. The library directory is recovered from mass storage. Permanent files are also recovered. A CHECK POINT SYSTEM command must be issued just prior to deadstart to prevent loss of SYSEDIT (system library modification) information.

A level 3 recovery deadstart is normally performed following an equipment malfunction (for example, channel or PPU hung), providing the system remains intact. It is recommended that a level 3 recovery deadstart be attempted before resorting to level 1 or level 0 deadstart. Only PPU memory confidence testing occurs during a level 3 recovery deadstart; central memory is unaffected.

For additional information concerning levels of deadstart, refer to Preparing for Recovery Deadstart later in this section under System Deadstart Procedures.

KEYBOARD ENTRIES

The following statements apply to operator/console communication during deadstart.

Refer to the illustration of console keyboard at the beginning of section 3.

- Entries typed from the console keyboard are displayed on the bottom of the left console screen as they are entered.
- The BKSP key deletes the previous character typed.
- The left blank key deletes the current line being typed (left blank is third key from right on top row of keyboard).
- The following message may appear above the console entry if the entry is unrecognizable: ILLEGAL ENTRY. An arrow points to the first field in error.

SYSTEM DEADSTART PROCEDURES

Either of two system deadstart procedures can be selected by setting bits 0 through 2 of word 13 on the deadstart panel (yyy). The options available are:

- Automatic system deadstart (yyy=000)
- System deadstart with options displayed (yyy=001)

Each of these procedures essentially performs the same function. The only difference is the measure of operator control. Although considerable intervention is allowed when the procedure for automatic system deadstart is selected, the options provided in the latter procedure extend operator control significantly. It should be noted that nearly all operator control during system deadstart is preliminary. That is, the operator merely specifies the conditions of deadstart. Once this is done, deadstart proceeds automatically and operator intervention is not required again until the system is initialized unless an error is encountered (refer to Initializing the System). Generally, this automatic process consists of the following steps.

1. Validate labels on all mass storage devices. This is done to ensure that the configuration matches that specified in the CMRDECK being used.
2. Build central memory tables that reflect information contained in the device labels (level zero deadstart only). If a recovery deadstart is being performed, the central memory tables can be recovered from checkpoint information on mass storage (level 1, 2) or verified against information in device labels if central memory is found to be intact (level 3).
3. Load base operating system (core system) programs into central memory. Again, the level of deadstart determines the amount of loading to be performed.

Deadstart progress can be monitored on the console display screen(s). If errors are encountered during deadstart, a descriptive message is displayed on the right console screen and deadstart halts. Refer to Error Processing at the end of this section for complete information and corrective action.

AUTOMATIC SYSTEM DEADSTART

Although this procedure can be fully automatic, some operator intervention may be required. The operator is allowed to modify the CMRDECK being used. Under normal circumstances, this is necessary only when initializing a mass storage device or selecting an IPRDECK (installation parameters) other than the one currently specified in the CMRDECK. In addition, the operator must respond if an error status bit is set in a status/control register† (refer to R option under System Deadstart with Options Displayed) or an error is detected during the memory confidence test.

† CDC CYBER 170 Series only.

The following procedure assumes that the required mass storage devices have packs mounted and/or are available, the deadstart tape is mounted properly, and the deadstart panel is set correctly (refer to Setting the Deadstart Panel earlier in this section).

1. This step summarizes the settings for words 13 and 14 on the deadstart panel. Check to ensure that the fields in these words are set as follows:
 - a. Word 13, bits 0 through 2 (yyy) must be set to 000.
 - b. Word 13, bits 3 through 8 (xxx xxx) must be set to specify the CMRDECK number to be used.
 - c. Word 13, bits 9 through 11 (www) specifies the LIBDECK number to be used (LIBDECK number specified in CMRDECK has precedence over that specified on deadstart panel).
 - d. Word 14, bits 0 through 5 (sss sss) specifies the mass storage devices (corresponding to EST ordinals 0 through 5) on which the system library is to reside. If more than one device is specified, they must be of the same type. If a system device is specified, the deadstart procedure is fully automatic. If CMRDECK modifications are to be made, this field must be set to zero (sss sss=000 000).
 - e. Word 14, bits 6 through 8 (ppp) specifies the central processor control options. This field is normally set to 000.
 - f. Word 14, bits 9 through 11 (rrr) specifies the level of deadstart to be performed.

Refer to topics under Setting the Deadstart Panel for complete information.

2. Initiate deadstart process.

Initiate the deadstart process by momentarily activating the deadstart switch. This toggle switch is labeled DEAD START and is found on both the console panel and the deadstart panel; either may be used.

If one or more system devices were specified in bits 0 through 5 of word 14 (fully automatic procedure), proceed to step 6. Otherwise, continue with the following step.

3. Modify CMRDECK.

If bits 0 through 5 of word 14 are set to zero (sss sss=000 000), an instruction display entitled CMRINST appears on the console screen(s) immediately after activating the deadstart switch. All valid CMRDECK entries are defined in this display. Several of the entries listed are assigned system default values. These values are assumed if the entries do not appear in the CMRDECK being used. To view the contents of the CMRDECK being used, press the right blank key (rightmost key on top row of console keyboard - refer to illustration at beginning of section 3). The CMRINST display is returned by pressing the right blank key again. The display alternates each time the right blank key is pressed.

CMRDECK modification is accomplished by entering the appropriate changes or additions from the console keyboard. These entries can be made when either CMRDECK or CMRINST is being displayed. Each console entry supersedes the value currently specified in the CMRDECK (or default value in CMRINST). However, the modified CMRDECK remains in effect only until the next deadstart is performed. That is, changes to the CMRDECK are not recovered across deadstart unless a new deadstart tape is created to reflect those changes.

Since the extent of operator responsibility to effect CMRDECK modifications may vary from one installation to another, the following items describe only the more common operator entries. Refer to section 4 in part II of the Installation Handbook for complete information concerning all CMRDECK entries.

- a. IPD entry. This entry allows the operator to select an alternate IPRDECK (installation parameters) from the deadstart tape. Up to 4096 decimal IPRDECKs can be included on the deadstart tape (numbered 0 through 4095). If an IPD entry is not included in the current CMRDECK display, the first IPRDECK on the deadstart tape is selected by default (IPD=0 on CMRINST display). Type this entry in the following format.

IPD=n. (CR) (n is the alternate IPRDECK number)

- b. INITIALIZE entry. The purpose of this entry is to blank label a mass storage device during a level 0 deadstart. This entry is valid only when entered from the console keyboard. That is, the INITIALIZE entry cannot be included as part of the CMRDECK on the deadstart tape.

Before any mass storage device defined in the CMRDECK (by an EQ entry) can be used, it must have a label that can be recognized by the system. Existing labels are normally recovered automatically during all levels of system deadstart. However, should the existing label be destroyed (for example, during maintenance operations on the device) or a new mass storage device be added to the system, a new label must be created. This is the function of the INITIALIZE entry to CMRDECK. Type this entry in the following format

INITIALIZE, xx, op. (CR)

xx 1 to 2 digit number specified in EQ entry for device (for example, EQ05...). This is also the EST ordinal for the device.

op	Level of initialization
AL	Total initialize
PF	Permanent files
QF	Queue files
DF	Dayfiles
AF	Account files
EF	Error log
FP	Format Pack (844)

Depending upon the levels of initialization selected, all or part of the previously existing information on the device is lost when the new label is created. Total initialization or 844 format pack (AL or FP options) destroys all information on a device. The other options selectively purge information. A separate INITIALIZE entry is required for each option selected. FP results in an automatic selection of AL.

Before any options (except AL and FP) are processed, the K display is requested and the operator must enter the family name (FM) and device number (DN) of the device to be initialized. This is a final check to ensure that the correct device is being initialized.

If permanent files are to reside on the device being initialized, the CMRDECK must contain a PF entry for that device. The PF entry corresponds to the EST ordinal specified in the EQ entry, and indicates that permanent files can reside on the device. If the CMRDECK displayed contains a PF entry for the device being initialized, a new PF entry is not required unless the existing entry is to be altered, or the associated EQ entry is altered. Modification of an existing EQ entry clears all other associated entries, except a SYSTEM entry (PF, INITIALIZE, etc., are cleared). In addition, if PF entries do not currently exist in the CMRDECK, initializing a permanent file device will clear the PF entry in the device's label. Thus, it is necessary to reestablish the PF entry via the console keyboard if the device is to remain a permanent file device. For this reason, it is recommended that the PF entry for all mass storage devices used for permanent files be resident in the CMRDECK. Although this is recommended, it is not required. Refer to section 4 in part II of the Installation Handbook for complete information concerning the PF entry to CMRDECK.

If the EQ entry in the CMRDECK displayed indicates that the status of a particular mass storage device is OFF when the INITIALIZE entry is made, initialize status is maintained and occurs automatically when the DSD command ON is entered for that device during normal system operation.

It should be noted that initialization of mass storage devices can also be accomplished during normal system operation via the DSD command INITIALIZE (refer to description of command in section 3).

- c. SYSTEM entry. This entry enables the operator to specify the mass storage devices on which the system library is to reside. If CMRDECK modification was not necessary, this specification would normally have been made on the deadstart panel (bits 0 through 5 of word 14). The SYSTEM entry is valid only when entered from the console keyboard. That is, it cannot be included as part of the CMRDECK on the deadstart tape. In addition, new system devices can only be specified during a level 0 deadstart. For recovery deadstart levels 1 and 2, the system devices specified must be the same as those specified during the previous level 0 deadstart. The CMRDECK is ignored and the current equipment configuration is retained if level 3 recovery deadstart is selected.

Any mass storage device defined by an EQ entry in the CMRDECK (numbered 0 through 17 octal) can be specified as a system device. However, the following restrictions exist.

- EQ entry defining system device in CMRDECK cannot have status set to OFF.
- EQ entry defining system device in CMRDECK cannot have a corresponding REMOVE entry. In this case, the device would be termed removable, and as such, not suitable for a system device.
- If more than one device is specified as a system device, all devices specified must be of the same type.

Throughput can be greatly improved by specifying more than one system device because more than one system file can then be accessed at the same time. For example, if just two system devices are used instead of one, the time required to access system programs can be reduced by as much as one half. All mass storage devices of the same type can be specified as system devices. Specifying system devices via the deadstart panel (word 14) restricts the total number that can be specified to six.

Type this entry in the following format.

SYSTEM=xx₁, . . . , xx_n. (CR)

xx 1 to 2 digit number specified in EQ entry for device
(for example, EQ05...). This is also the EST ordinal for
the device.

NOTE

If a SYSTEM entry is not made (that is, no system devices defined), the system library will reside on the mass storage device defined in EST ordinal zero by default.

After completing all CMRDECK modifications, the operator may also modify the IPRDECK being used. The specific IPRDECK to be used, if other than default, was selected in item a of this step (IPD entry). The IPRDECK contains installation parameters which describe the mode of system operation. It is important for the operator to note that nearly all IPRDECK entries are also valid DSD commands. Therefore, IPRDECK modification is seldom required during deadstart since DSD commands can be used to make the same changes during normal system operation as the need arises. Installation parameters changed during normal system operation (via DSD commands) are not retained across any level of system deadstart. All valid DSD commands are described in section 3 of this manual.

If it is necessary to modify the IPRDECK, continue with step 4. Otherwise, proceed to step 5.

4. Modify IPRDECK.

When the CMRDECK or CMRINST is currently being displayed, type

NEXT. (CR)

An instruction display entitled IPRINST appears on the console screen(s) immediately after pressing the carriage return key (CR). All valid IPRDECK entries are defined in this display. Most of these entries are also valid DSD commands. To view the contents of the IPRDECK being used, press the right blank key. The IPRINST display is returned by pressing the right blank key again. The display alternates each time the right blank key is pressed.

IPRDECK modification is accomplished by entering the appropriate changes or additions from the console keyboard. These entries can be made when either IPRINST or IPRDECK is being displayed. Each console entry supersedes the value currently specified in the IPRDECK. However, the modified IPRDECK remains in effect only until the next level 0 deadstart is performed. That is, changes to the IPRDECK are not recovered across level 0 deadstart unless a new deadstart tape is created to reflect those changes.

For complete information concerning IPRDECK entries, refer to section 5 in part II of the Installation Handbook and also section 3 of this manual (DSD commands).

5. To signal that all modifications to the CMRDECK and/or IPRDECK have been completed, the operator types

GO. (CR)

6. If a level 0 or level 2 system deadstart is being performed, the deadstart tape is rewound to load point before the system library is loaded. The system library is automatically loaded from the deadstart tape to each mass storage device specified as a system device. In the event that no system device was specified, the system is loaded to the mass storage device defined by EST ordinal 0 (first entry in EST).

If a level 1 or level 3 recovery deadstart is specified, the system library is not loaded from the deadstart tape. In this case, the deadstart tape is rewound to load point and is not accessed again until another deadstart operation is performed. The system library is recovered from checkpoint information on mass storage. Central memory resident (CMR) tables such as the file name table (FNT), equipment status table (EST), and track reservation table (TRT) are either recovered from checkpoint information (level 1) or from central memory (level 3).

If a deadstart error occurs, a descriptive message appears on the right console screen, and depending upon the nature of the error, deadstart processing may halt. Refer to Error Processing at the end of this section for complete information and corrective action. In addition, if the system is being loaded from the deadstart tape (level 0, 2 only), the name of each system library program is also displayed on the right console screen as it is being loaded. This allows the operator to monitor deadstart progress.

The left console screen contains the message ENTER DATE YY/MM/DD. and indicates that the operator may begin system initialization (refer to Initializing the System later in this section). System initialization can be performed while the system is being loaded.

SYSTEM DEADSTART WITH OPTIONS DISPLAYED

The following procedure differs only slightly from that described for Automatic System Deadstart. In fact, the only difference is that an options display is provided to enable greater operator control over the deadstart process. It is assumed that all mass storage devices are mounted and/or are available, the deadstart tape is mounted properly, and words 1 through 14 on the deadstart panel have been set correctly (refer to Setting the Deadstart Panel earlier in this section).

1. This step summarizes the settings for words 13 and 14 on the deadstart panel.

Check to ensure that bits 0 through 2 of word 13 (yyy) are set to 001; this is a mandatory setting. If necessary, select the LIBDECK number to be used by setting bits 9 through 11 of word 13. The remaining field in word 13, bits 3 through 8 (xxx xxx), and all fields of word 14 are optional since the options display allows the operator to specify values for these fields from the console keyboard. However, it is recommended that these fields be set on the deadstart panel in order to establish default values. In this case, the options display can be used when it is required to alter the default values established on the deadstart panel.

2. Initiate deadstart process.

Initiate the deadstart process by momentarily activating the deadstart switch. Either the pushbutton switch on the console (located in center of console just below the display screens) or the toggle switch labeled DEAD START on lower portion of deadstart panel may be used.

3. Select appropriate options from options display.

The deadstart options display appears on the left console screen immediately after activating the deadstart switch. Figure 2-2 illustrates the options display appearing for a CDC CYBER 170 Series machine. Figure 2-3 illustrates the options display appearing for a CDC CYBER 70 or 6000 Series machine. Each of the options may be selected simply by entering the corresponding one character code on the console keyboard. Each option is described individually following the illustrations.

```
DEAD START OPTIONS.  
  
CR  LOAD SYSTEM.  
I   IGNORE ERROR PROCESSING.  
K   SET «CMRDECK» NUMBER.  
T   DEAD START ANOTHER TAPE.  
W   ENTER WORD 14.  
X   DISABLE CEJ/MEJ.  
O   TURN OFF CPU 0 / CMU.  
1   TURN OFF CPU 1 / CMU.  
D   DEAD START DUMP.  
F   FULL DUMP TO TAPE.  
P   PP 0 DISPLAY.  
S   DIAGNOSTIC SEQUENCER.  
R   DISPLAY S/C REGISTER.
```

Figure 2-2. CDC CYBER 170 Series Deadstart Options Display

```
DEAD START OPTIONS.  
  
CR  LOAD SYSTEM.  
I   IGNORE ERROR PROCESSING.  
K   SET «CMRDECK» NUMBER.  
T   DEAD START ANOTHER TAPE.  
W   ENTER WORD 14.  
X   DISABLE CEJ/MEJ.  
O   TURN OFF CPU 0 / CMU.  
1   TURN OFF CPU 1 / CMU.  
D   DEAD START DUMP.  
F   FULL DUMP TO TAPE.  
P   PP 0 DISPLAY.  
S   DIAGNOSTIC SEQUENCER.
```

Figure 2-3. CDC CYBER 70/6000 Series Deadstart Options Display

Option

Description

CR Load System. Pressing the carriage return key (CR) when deadstart options are displayed causes system deadstart processing to continue. Additional options cannot be selected after this entry. This has special significance with respect to the K, W, X, 0, and 1 options. That is, if values specified for word 13 or word 14 on the deadstart panel are to be modified, the changes must be completed before entering this option.

If any error status bits are set in a status/control register (CDC CYBER 170 Series only), processing proceeds as if the R option had been entered. The contents of the S/C registers are displayed and operator action is required (refer to R Option).

Operator intervention after the CR option is entered is the same as that described in the procedure for Automatic System Deadstart. Continue with one of the following steps in that procedure.

- a. If bits 0 through 5 of word 14 are set to zero via the deadstart panel switches or by using the W option (no system device specified), continue with step 3 in the procedure for Automatic System Deadstart (disregard comment in first sentence concerning the deadstart switch).
- b. If one or more system devices are specified in bits 0 through 5 of word 14, continue with step 6 in the procedure for Automatic System Deadstart.

I Ignore non-fatal errors in status/control register (CDC CYBER 170 Series only) and memory confidence testing. If a fatal error is encountered during memory confidence testing, the deadstart sequence unconditionally terminates.

K Set CMRDECK Number. This option displays the current CMRDECK number, specified by bits 3 through 8 of word 13 on the deadstart panel, and allows selection of an alternate CMRDECK. If a level 1 or level 2 recovery deadstart is to be performed, the CMRDECK selected during the most recent level 0 deadstart must be used. The CMRDECK is ignored and the current equipment configuration is retained if a level 3 recovery deadstart is performed.

The display produced temporarily replaces the options display and consists of the following one line message that appears in the center of the screen.

SET CMRDECK 00

(current CMRDECK number)

The operator then enters the number of the alternate CMRDECK to be used. The number entered replaces the number currently displayed. Pressing the carriage return key (CR) returns the options display and additional options can then be selected.

For additional information concerning CMRDECK selection, refer to Selecting the CMRDECK earlier in this section.

T Deadstart Another Tape. This option allows an alternate deadstart tape to be used. The alternate deadstart tape unit must be connected to the same channel as the current deadstart tape unit.

Option

Description

The options display is temporarily replaced by the following one line message that appears in the center of the screen.

DEAD START TAPE 0000

The operator then enters the tape unit and controller number in the following format.

eOuu

- e Represents the tape controller number to which the tape unit is connected.
- uu Represents the physical unit number of the tape unit on which the alternate deadstart tape is mounted (number is indicated on selector switch at top of unit).

The numbers entered replace the zeros currently displayed. When the carriage return key (CR) is pressed, the options display from the alternate deadstart tape appears on the left console screen. New options can then be selected.

W

Enter Word 14. This option is available to modify any or all values set in word 14 on the deadstart panel.

The options display is temporarily replaced by the following one line message that appears in the center of the screen. This is the octal image of the values currently specified in word 14.

WORD 14 rpss

(current value of word 14)

- r Designates current level of system deadstart.
- p Designates current central processor control options. If this is the only field to be altered, refer to description of X, 0, or 1 option.
- ss Designates current system devices. ss represents bits 0 through 5 of word 14 and also corresponds to the devices defined by EST entries 0 through 5.

The operator then enters the new value (octal) for each field. All fields must be entered even if only one is to be altered. In addition, the values are entered from right to left (value for r entered first). Refer to Entering Word 14 earlier in this section for complete information concerning all fields of word 14.

After entry is complete, press the carriage return key (CR) to return the options display. Additional options can then be selected.

Example:

This example illustrates how level 0 (initial deadstart) can be selected if level 3 recovery deadstart is currently specified in word 14 on the deadstart panel. Assume that word 14 is set as follows on the deadstart panel (typical setting):

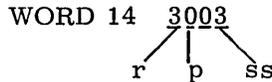
0014	r	p	s	s	(1 indicates switch in up position)
	011	000	000	011	

Option

Description

- r Indicates level 3 recovery deadstart.
- p Indicates no central processor options set.
- ss Indicates system resides on devices defined by entries 0 and 1 in EST.

To select a level 0 system deadstart, enter the W option from the options display. The resulting display is



The value 3003 is the octal equivalent of the word 14 switch settings (binary) shown.

Level 0 deadstart can now be specified by entering the following value.

0003

The resulting display is

WORD 14 0003

Pressing the carriage return key (CR) returns the options display and additional deadstart options can then be selected. When the CR option is selected, the level 0 system deadstart is performed.

X

Disable CEJ/MEJ Option. The X option can be used to disable the CEJ/MEJ option if it is enabled on the deadstart panel (switch for bit 8 of word 14 set to down position). There is no visual indication that this option has been entered. That is, the options display remains on the screen and additional options can be entered immediately. In addition, pressing the carriage return key (CR) after entering this option will initiate loading of the system (refer to description of CR option).

Use of this option is not recommended since the system will automatically determine if the CEJ/MEJ option is present in the system hardware and initialize accordingly. System failure may result if the CEJ/MEJ option is disabled either by setting the switch for bit 8 of word 14 to the up position, or by entering this option.

If it is necessary to disable the CEJ/MEJ option for maintenance purposes, the switch labeled CEJ/MEJ on the deadstart panel should be used. Also, this must be done before activating the deadstart switch.

0
(zero)

Turn Off CPU 0. This option can be used to disable CPU 0 if it is currently enabled on the deadstart panel (switch for bit 6 of word 14 set to down position). There is no visual indication that this option has been entered. That is, the options display remains on the screen and additional options can be entered immediately. In addition, pressing the carriage return key (CR) after entering this option will initiate loading of the system (refer to description of CR option).

On dual CPU systems, this option allows use of the system when CPU 0 is down. If either CPU is disabled in a dual CPU system, detection of the compare move unit (CMU) is also disabled. Disabling CPU 1 on single CPU systems inhibits detection of the CMU. CPU 0 and CPU 1 should not be disabled simultaneously.

Option

Description

If both CPU 0 and CPU 1 are enabled on the deadstart panel and are not disabled using the 0 or the 1 option, the system will automatically determine if both CPUs are available and initialize accordingly.

- 1 Turn Off CPU 1. This option can be used to disable CPU 1 if it is currently enabled on the deadstart panel (switch for bit 7 of word 14 set to down position). There is no visual indication that this option has been entered. That is, the options display remains on the screen and additional options can be entered immediately. In addition, pressing the carriage return key (CR) after entering this option will initiate loading of the system (refer to description of CR option).

On dual CPU systems, this option allows use of the system when CPU 1 is down. If either CPU is disabled in a dual CPU system, detection of the compare move unit (CMU) is also disabled. Disabling CPU 1 on single systems inhibits detection of the CMU. CPU 0 and CPU 1 should not be disabled simultaneously.

If both CPU 0 and CPU 1 are enabled on the deadstart panel and are not disabled using the 0 or the 1 option, the system will automatically determine if both CPUs are available and initialize accordingly.

- D Dead Start Dump. This option temporarily changes the deadstart function from system to maintenance deadstart. Deadstart dump is a maintenance task that can be used to selectively dump the contents of PPU memory and/or central memory to a specified line printer. This option is typically used when it is known what portion of central memory is to be dumped. Refer to section 3 in part II of the Installation Handbook for deadstart dump procedures.

When this maintenance task is completed, simply activate the deadstart switch again. The options display reappears and additional options can then be selected.

- F Full Dump to Tape. This option temporarily changes the deadstart function from system to maintenance deadstart. Full dump to tape is a maintenance task that can be used to dump the contents of all PPUs memory, central memory, the CPU hardware registers, and S/C registers (CDC CYBER 170 Series only) to magnetic tape. ECS can optionally be dumped. Later, all or part of this dump can be printed for observation. This option is typically used when the portion of central memory and/or PPU memory to be dumped is unknown. In addition, dumping to magnetic tape rather than to a line printer (refer to D option) takes considerably less time. This may be advantageous when large dumps must be performed. Refer to section 3 in part II of the Installation Handbook for full dump to tape procedures.

When this maintenance task is completed, simply activate the deadstart switch again. The options display reappears and additional options can then be selected.

Option

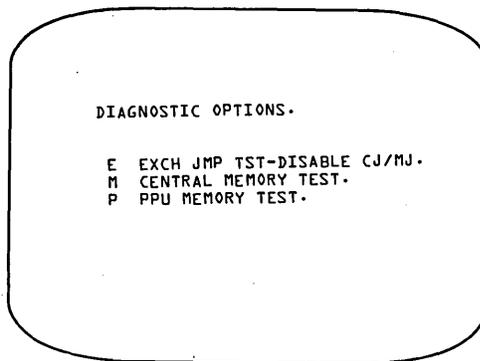
Description

P PP 0 Display. This option temporarily changes the deadstart function from system to maintenance deadstart. The maintenance task performed displays the contents of PPU 0 (zero) memory on the console screen. This option is generally used by the site analyst or customer engineer (CE) to enter sample PPU programs (for example, to test peripheral devices on the system).

When this maintenance task is completed, simply activate the deadstart switch again. The options display reappears and additional options can then be selected.

S Select Diagnostic Options. This option changes the deadstart function from system to hardware maintenance deadstart. The S option is available to select tests which determine the reliability of central memory, PPUs, and the hardware.

The deadstart options display is replaced by the following display.



The operator may select any one option by entering the corresponding character on the console keyboard.

Option

Description

E Exchange Jump Test. The maintenance task performed tests the exchange jump package to determine the reliability of the hardware.

NOTE

The exchange jump test alters the contents of central memory. Thus, a level 3 recovery deadstart cannot be performed if this option is selected.

Prior to selecting this option, CEJ/MEJ must be disabled. When E is entered, the deadstart options display is replaced by the exchange jump test options display. This display provides options for testing the exchange jump package.

When this maintenance task is completed, CEJ/MEJ should be enabled. Then simply activate the deadstart switch again. The options display reappears and additional options can be selected.

Option

Description

Option

Description

M

Central Memory Test. The maintenance task performed tests the reliability of central memory.

NOTE

The central memory test alters the contents of central memory. Thus, a level 3 recovery deadstart cannot be performed if this option is selected.

When M is entered, the deadstart options display is replaced by the central memory test options display. This display provides options to select the memory test pattern to be used.

When this maintenance task is completed, simply activate the deadstart switch again. The deadstart options display reappears and additional options can then be selected.

P

PP Memory Test. The maintenance task performed tests memory reliability for each PPU in the system.

When this maintenance task is completed, simply activate the deadstart switch again. The options display reappears and additional options can then be selected.

R†

Check status/control register(s) for error status bits. In addition to the contents of the S/C registers, the bit numbers and explanations of any error status bits which may be set are displayed as in the following example.

```
SC-0-2 0000 0000 0000 0000 0000.  
SC-0-1 0000 0000 0000 0000 0000 0000.  
SC-0-0 1413 0000 0000 0000 0040 0001.
```

```
00 - READ PYRAMID PARITY ERROR.  
17 - PPO3 MEMORY PARITY ERROR.
```

```
OPERATOR COMMANDS AVAILABLE-  
CE. CLEAR ALL ERROR BITS.  
C-X.Y. CLEAR BIT X IN REGISTER Y (Y=0 OR 1).  
S-X.Y. SET BIT X IN REGISTER Y (Y=0 OR 1).  
*CRM REENTER DEADSTART SEQUENCE.
```

```
NOTE - BITS SET BY THIS ROUTINE WILL BE  
CLEARED BY THE OPERATING SYSTEM.
```

The commands available to the operator appear in the lower portion of the display. In the commands to set or clear a bit, y is 0 for the S/C register on channel 16 and 1 for the S/C register on channel 36 (if it exists).

† This option applies to CDC CYBER 170 Series only.

Option

Description

Any error status bit set by this option is available during the deadstart sequence. It can be cleared by command using this option or automatically when the operating system is loaded. Any control bit set by this option, excluding those cleared by deadstart master clear (refer to the system hardware reference manual), remains set upon entry to the diagnostic tests.

The operator may continue by entering (CR) or reenter the deadstart sequence by activating the deadstart switch.

In summary, it may be helpful to observe the following guidelines when selecting deadstart options and determining the order in which they should be entered.

1. Since it is necessary to redeadstart upon completion of a maintenance task, options that select maintenance tasks should always be entered first (refer to description of D, F, P, R, and S option). For example, if other options were entered prior to selecting a maintenance task, they would be cleared when the deadstart switch is activated.

However, it is generally not required to select a maintenance task. In addition, these options are used primarily by the system analyst or customer engineer.

2. If it is necessary to specify an alternate deadstart tape (refer to description of T option), this should be done after the last maintenance task has completed.
3. Enter options necessary to alter the values of word 13 and/or word 14 on the deadstart panel (refer to description of K, W, X, 0, and 1 options).
4. Enter the CR option last. This causes system deadstart processing to continue. Refer to the description of the CR option for complete information.

Deadstart then proceeds to the loading of the memory confidence test. The memory confidence test verifies the ability of PPU and central memory to hold simple data patterns and presets the contents of PPU and central memory to a known state of all ones (777...777) before the operating system is loaded. The control bits of the S/C register on CDC CYBER 170 Series machines are cleared, as is the interlock register on CDC CYBER 70 Series machines. The interlock register is cleared so that no bits are set when and if the S/C register simulator SCRSIM is called.

A display of the current address being tested for each processor is maintained on the left screen. The information displayed varies depending on the machine being used. The left screen of the CDC CYBER 170 Series shows the current S/C register and its respective bit in addition to the PPU number and current PPU data address being checked, the current central memory address being checked, and the value of the P register (Figure 2-4).

```
      CHECK COMPUTER MEMORY.  
  
S/C REGISTER 01 BIT 0324  
PPU 05 0567  
CM ADDRESS 056472 P0=000314
```

Figure 2-4. CDC CYBER 170 Series Memory Check

The CDC CYBER 70 Series left screen display contains the same information except the interlock register and its bit are used in place of the S/C register and bit (Figure 2-5).

```
      CHECK COMPUTER MEMORY.  
  
INTERLOCK REGISTER 00 BIT 0077  
PPU 21 0000  
CM ADDRESS 000005 P0=000314
```

Figure 2-5. CDC CYBER 70 Series Memory Check

The CDC 6000 Series left screen displays the PPU number, the current PPU and central memory address being tested, and the P register (Figure 2-6).

```
          CHECK COMPUTER MEMORY.

PPU 10 2473
CM ADDRESS 003021 P0=000322
```

Figure 2-6. 6000 Series Memory Check

If level 3 recovery is selected, the CM address and P register are replaced by the message

```
CM NOT ACTIVE - LEVEL 3 REC.
```

The right screen contains error messages and information on the data expected and actually found in specific addresses. The displays shown below (Figures 2-7 and 2-8) are applicable to a CDC CYBER 170 Series machine. The only difference for CDC CYBER 70/6000 Series machines is the absence of the S/C register fields.

```
          MEMORY DATA ERRORS.

PPU 21
ADDRESS      0020
EXPECTED DATA 7777
ACTUAL DATA  0000
DIFFERENCE   7777

CENTRAL MEMORY
NONE.

          S/C REGISTER ERRORS.

0-01- CSU 0 ADDRESS PARITY ERROR
0-05- CMC PARITY ERROR
```

Figure 2-7. PPU Memory Data Errors

```

MEMORY DATA ERRORS.

PPU 21
NONE.

CENTRAL MEMORY
ADDRESS      000005
EXPECTED DATA 0000 0000 0000 0000 0000
ACTUAL DATA  0000 0000 0000 0000 5252
DIFFERENCE   0000 0000 0000 0000 5252

S/C REGISTER ERRORS.

0-01- CSU 0 ADDRESS PARITY ERROR
0-05- CMC PARITY ERROR

```

Figure 2-8. Central Memory Data Errors

The operator may continue after encountering any non-fatal memory error by pressing the space bar. If the I option is selected before entering CR, no stops on non-fatal errors are taken. However, the occurrence of the message

FATAL COMMUNICATIONS ERROR.

indicates PP 0 cannot communicate with the CPU or the PPU identified on the right screen display and the deadstart sequence is terminated immediately.

If any S/C register errors occur on a CDC CYBER 170 Series machine during the memory confidence test, the S/C register error display is called (unless the I options was selected). The operator should continue as if the S/C register display (refer to the R option under Deadstart with Options Displayed) had been entered.

PREPARING FOR RECOVERY DEADSTART

During system operation, there are times that an error occurs that prevents further system activity and that cannot be corrected by operator action. Often the situation can be corrected by deadstarting the system and recovering prior activity. The success of such a recovery depends upon the severity of the problem and to what extent system information has been destroyed. There are three levels of recovery deadstart available (levels 1 to 3). Table 2-1 lists each deadstart level, including level 0 (initial deadstart), and describes the extent of recovery possible. Unless specifically noted, this information applies regardless of whether the QPROTECT installation option is set.

LEVEL 3 RECOVERY

A level 3 recovery deadstart is typically performed following an equipment malfunction (for example, channel or PPU hung) providing the system remains intact. Basically, the file name table (FNT), track reservation table (TRT), equipment status table (EST), and control point areas of central memory must be intact in order to successfully perform a level 3 recovery deadstart. However, unless it can be determined that central memory is no longer intact, it is recommended that level 3 recovery be attempted before another deadstart level is selected. This is recommended because current system activity, as it existed at the time of the malfunction, can best be recovered by performing a level 3 recovery deadstart. Only PPU memory confidence testing occurs during a level 3 recovery deadstart; central memory is not affected. The following rules apply.

1. Deadstart options E and M cannot be specified if the procedure for System Deadstart With Options Displayed is used. Both the E and M option (exchange jump test and central memory test, respectively) alter the contents of central memory making a level 3 recovery deadstart impossible.
2. Level 3 recovery deadstart is impossible after an attempted checkpoint recovery (level 1), or after an aborted level 0 (initial) deadstart.

It is recommended that the operator stop current system activity prior to beginning the system deadstart procedure (that is, before activating the deadstart switch). To accomplish this, the operator should attempt entry of the following DSD commands.

1. ONSW1.	Enters all time-sharing users into recovery state. This and the following commands are necessary only if TELEX (time-sharing executive routine) is active.
1. STOP.	Drops TELEX
IDLE.	Idles active control points and prevents scheduling of new jobs to a control point.
CHECK POINT SYSTEM.	Rolls out all jobs with a queue priority less than or equal to MXPS (maximum queue priority for user jobs) and writes the contents of central memory tables to mass storage. Jobs with queue priority greater than MXPS (TELEX, BATCHIO, etc.) cannot be rolled out.
UNLOCK.	Necessary only if console is currently locked.
STEP.	Prevents the system from processing PPU requests. This stops all central memory I/O operations.

LEVEL 1 RECOVERY

When a system malfunction that destroys the contents of central memory is encountered, a level 1 recovery deadstart can be selected. However, this should be done with extreme caution because recovery is from checkpoint information on mass storage. If there is any question concerning the reliability of the checkpoint information, perform a level 0 (initial) deadstart. Failure to do this may jeopardize the integrity of permanent files. In the event that the checkpoint information is not reliable, it may be possible to perform a level 1 recovery deadstart on a temporary basis in order to dump accounting information (refer to DSD command ACCOUNT in section 3). Unless the operator is certain that the contents of central memory was destroyed by the system malfunction, he should first attempt to perform a level 3 recovery deadstart.

The following rules apply when performing a level 1 recovery deadstart.

1. The DSD command CHECK POINT SYSTEM (refer to section 3) must be issued prior to the system malfunction. If a significant amount of system activity has taken place since the last checkpoint was performed, the checkpoint information on mass storage, used in level 1 recovery, may no longer be reliable. If a checkpoint is not performed prior to system malfunction, error messages will be issued to the error log dayfile upon completion of a level 1 recovery deadstart (message ROLLIN FILE BAD is common).
2. Memory dumps must be completed before level 1 recovery deadstart begins since memory confidence testing destroys the contents of both central memory and PPUs.
3. The mass storage equipment configuration must be the same as specified during the most recent level 0 deadstart, that is, the same CMRDECK must be used.
4. The system devices (mass storage devices on which the system library resides) must be the same as specified during the most recent level 0 deadstart.
5. The LIBDECK selection, if specified via the deadstart panel, must remain the same as specified during the most recent level 0 deadstart. If the LIBDECK is specified in the CMRDECK, it would automatically be selected (refer to item 2).

It is recommended that the operator stop current system activity prior to beginning the system deadstart procedure (that is, before activating the deadstart switch). To accomplish this, the operator should attempt entry of the following DSD commands.

- | | |
|---------------------|--|
| 1. ONSW1. | Enters all time-sharing users into recovery state. This and the following command are necessary only if TELEX (time-sharing executive routine) is active. |
| 1. STOP. | Drops TELEX |
| IDLE. | Idles active control points and prevents scheduling of new jobs to a control point. |
| CHECK POINT SYSTEM. | Rolls out all jobs with a queue priority less than or equal to MXPS (maximum queue priority for user jobs) and writes the contents of central memory tables to mass storage. Jobs with queue priority greater than MXPS (TELEX, BATCHIO, etc.) cannot be rolled out. |
| UNLOCK. | Necessary only if console is currently locked. |
| STEP. | Prevents the system from processing PPU requests. This stops all central memory I/O operations. |

LEVEL 2 RECOVERY

Level 2 recovery deadstart is normally used in system test situations and is not recommended for the normal production environment. If level 2 recovery is selected, all jobs and active files are recovered from checkpoint information on mass storage as in level 1 recovery. However, no attempt is made to recover the system. Instead, the system is loaded from the deadstart tape as in level 0 deadstart. Note that system loading cannot begin until system initialization (entry of date and time) has been performed. In all other respects, level 2 recovery is identical to that described for level 1 in the preceding description, and all rules apply.

LEVEL 0 DEADSTART

Level 0 or initial deadstart is used in cases where a recovery deadstart is not possible. This is a complete or initial load from the deadstart tape. Only preserved files, which includes permanent files, queue files, and system dayfiles, are recovered (preserved files are recovered on all levels of system deadstart). Because memory confidence testing destroys the contents of central memory and PPU's, all memory dumps must be completed before deadstart begins.

INITIALIZING THE SYSTEM

Each time a system deadstart function is performed, it is necessary to initialize the system. Essentially, this consists of entering the current date and time. The system uses the date and time (updated every second) for dayfile messages and to update permanent file catalogs and directories for files being accessed. This includes the creation, last modification, and last access date and time for each permanent file in the system. Thus, it is extremely important to enter the correct date and time in order to accurately maintain these system records. If a level 3 recovery deadstart is being performed, it is possible to recover the date and time from the previous system deadstart. However, this is not recommended since the new date and time recorded for system records would no longer be accurate.

When the system loading (or recovery) phase of deadstart is about to begin, the following one-line message appears in the center of the left console screen and requests entry of the current date.

ENTER DATE YY/MM/DD.

The operator types the current date, followed by a carriage return (CR), in the following format.

yy/mm/dd. (CR)
yy year; 00 - 99
mm month; 01 - 12
dd day; 01 - nn (nn is the number of days in the month)

To recover the previous date on a level 3 recovery deadstart, enter carriage return (CR) alone. For all other levels of deadstart, pressing CR without first entering the date causes the system to assume the date when the deadstart tape was created.

When the system has accepted the date entry, it displays the following request for entry of the current time.

ENTER TIME HH.MM.SS.

The operator types the current time followed by a carriage return (CR) in the following format.

hh.mm.ss. (CR)
hh hour; 00 - 23
mm minute; 00 - 59
ss second; 00 - 59

To recover the previous time on a level 3 recovery deadstart (time entered during last

deadstart plus time accumulated until this deadstart), enter carriage return (CR) alone. For all other levels of deadstart, pressing (CR) without first entering the time causes the system to set the time to 00.00.00.

The time entry completes system initialization and system loading (or recovery) begins. Normal job processing is initiated automatically by DSD commands specified in the IPRDECK. If a level 1 or level 3 recovery deadstart is being performed, the system recovers all jobs and active files and resumes normal operation immediately. However, if an initial deadstart (level 0) or level 2 recovery deadstart is being performed, job processing may not be initiated immediately. This depends upon the length of time required to load the system from the deadstart tape (progress can be monitored on the right console screen). If tape loading has not completed when the time entry is made, the DSD commands specified in IPRDECK are displayed on the lower portion of the left screen and are flashed. In the period of time until tape loading completes, one or more of the DSD commands can be cleared by pressing the left blank key (third key from right on top row of keyboard) as many times as is necessary to clear the flashing entry. Clearing a command prevents it from being executed when tape loading completes. In this case, the commands necessary to initiate job processing must be entered manually from the console keyboard (refer to Initiating Job Processing).

When tape loading is complete, the deadstart tape is rewound to load point and is not referenced again during operation unless another deadstart is necessary. The operator can clear, unload, and remove the deadstart tape and use the tape unit for other operations.

INITIATING JOB PROCESSING

Control point assignment is automatic under system operation. Once deadstart is complete, processing proceeds with little or no operator intervention. As mentioned in the previous topic, the DSD commands necessary to initiate job processing are set up in the IPRDECK. If the operator decides to clear the initial DSD commands, he must manually initiate job processing. This is done by typing

AUTO. (CR)

on the console keyboard. If all standard subsystems are set to be enabled in the IPRDECK, the system automatically calls those subsystems to specific control points as follows:

<u>Control Point Number</u>	<u>Job Name</u>	<u>Activity</u>
1	TELEX.	Time-sharing subsystem executive routine
2	TRANEX.	Transaction subsystem executive routine
3	NEXT.	Available for automatic system assignment
.	.	
.	.	
.	.	
n-3	NEXT.	
n-2	MAGNET.	Magnetic tape subsystem executive routine
n-1	BATCHIO.	Central site automatic batch input/output

n	EXPORTL.	Export/Import; remote batch job input/output
n+1	SYSTEM.	

However, the operator may instead enter the DSD command.

MAINTENANCE. (CR)

which performs the same function as AUTO but additionally assigns several maintenance routines, according to mainframe type, to available control points and runs them as normal jobs with minimum queue and CPU priorities. These routines are CPU or central memory test routines designed to detect hardware errors. These routines display error messages either at the control point on the B display (refer to section 4) or in the system error log. The error log can be displayed by typing

A, ERROR LOG. (CR)

The operator should monitor these routines from time to time. If a maintenance routine displays an error message indicating a hardware malfunction has occurred, a customer engineer should be called. It is recommended that these programs be run at all times. The maintenance programs use little memory, are run at minimum CPU and queue priority, and are automatically rolled out if necessary; thus, system performance is not severely affected. Descriptions of the maintenance routines can be found in the On-Line Maintenance Software Reference Manual.

If an initial (level 0) deadstart was performed, it may be necessary to enter the following command.

X. ISF. (CR)

This is the DSD command that calls the ISF program to activate system files VALIDUS (user validation), PROFILA (project validation, if available), RESEXDF and RESEXVF (resource management control files). This command is entered from the console, unless it is an entry in the IPRDECK being used, if the system validation file (VALIDUS) is to be used. The system checks the VALIDUS file when a user tries to access the system to determine if he is a valid user. For additional information concerning the ISF command, refer to section 1 in part IV of the Installation Handbook.

ERROR PROCESSING

Often, problems that may arise during deadstart may be detected visually. The following list describes two such problems and the possible cause.

<u>Problem</u>	<u>Cause</u>
Tape moves but stops before any display is activated.	<ul style="list-style-type: none"> ● There is a parity on one of the first records of the deadstart tape. ● The deadstart tape is not an I-mode unlabeled tape. ● A 7-track tape is mounted on a 9-track drive or vice versa. ● Tape unit is set to wrong density. ● Word 12 on deadstart panel is set incorrectly.

- The tape unit is on a channel with a PPU.
- The magnetic tape controller has detected a channel parity error on a CDC CYBER 170 Series machine.

Tape does not move.

- If the unit select switch light on the deadstart tape unit is on, the correct unit is selected but the deadstart panel is set incorrectly. Often it is the load address in word 12 that is not set correctly.
- If the unit select switch light is not on, check the channel, controller, and unit selections on the deadstart panel.
- Two or more units may have the same physical unit number.
- Unit is not ready.
- The tape unit is on a channel with a PPU.
- Either the card reader and tape unit (667 or 669 only) are on the same channel or the card reader/tape unit is on a channel with a PPU.
- The magnetic tape controller has detected a channel parity error on a CDC CYBER 170 Series machine.

The following topics contain an explanation of the error message that can occur during system deadstart. These error messages are grouped into four categories.

- General - can occur at any time during deadstart.
- System Initialization - occurs during the initial deadstart sequence (before the first deadstart tape rewind).
- Recovery - occurs during deadstart recovery or during recovery of mass storage devices.
- System Library Building - occurs during the building of the system library.

For a proper understanding of the problems which may occur during deadstart, there are several basic concepts with which the operator should be familiar. For example, because most errors that occur involve mass storage devices, the operator should be familiar with their use in the system. Each mass storage device has a label that contains descriptive information about its contents. For certain levels of recovery deadstart, this information must be consistent with corresponding information contained in central memory or provided through deadstart procedures. Conflicts can result in deadstart error messages. An attempt is made to recover all mass storage devices defined in the EST during all levels of system deadstart. The specific recovery function performed depends upon the level of deadstart selected. Table 2-2 describes the recovery function performed for each deadstart level as well as the type of errors that can be encountered. The system response to errors and the recommended operator action are also listed.

For all deadstart messages described on the following pages, dt is the device type and xx is the EST ordinal of the device.

Refer to appendix B for information concerning all operator messages.

GENERAL

The following general messages may occur during deadstart.

<u>Message</u>	<u>Description</u>
ERROR dt xx, location	<p>A disk error has occurred. Location refers to the location of the error within the device. An error of this type for 844 Disk Storage Subsystem could be error DI02, C116, T17, S14. If the operator desires to continue, he enters GO. Information being written to disk at this time, however, might not be valid.</p> <p>Another deadstart can also be attempted, with the track locked out by use of the proper CMRDECK entries (such as RTK). If disk errors persist, consult a customer engineer.</p>



Reserving a track on a permanent file device without initialization can result in loss of permanent file information (for instance, a TRT linkage error can occur).

SYSTEM TAPE PARITY ERROR.	<p>The operator can continue by typing GO., in which case information transferred from tape might not be valid; or he can attempt another deadstart at a different tape density or on a different tape unit, or with a different tape. Check to ensure that deadstart tape is unlabeled I-mode tape, and that the tape unit on which it is mounted is the correct type (that is, 7- or 9-track).</p>
---------------------------	--

SYSTEM INITIALIZATION

The following messages can occur during the initialization phase of deadstart.

<u>Message</u>	<u>Description</u>
NO SYSTEM DEVICE DEFINED.	<p>The mass storage device to which the system is to be loaded has not been specified. Define a mass storage device as equipment 0; specify another mass storage device with the SYSTEM=n command; or attempt another deadstart and specify a system device with bits 0 through 5 of word 14 of the deadstart panel.</p>

<u>Message</u>	<u>Description</u>
SYSTEM FILE FORMAT ERROR.	Text defined by deadstart parameters (or in CMRDECK) does not exist on the deadstart tape.
TRACK BUFFER FULL.	Too many reserved track entries in CMRDECK. No more entries will be accepted.
EQ0 NOT MASS STORAGE.	The system must be configured with EST ordinal 0 as a mass storage device.
CMRDECK NOT ON TAPE.	The CMRDECK specified on deadstart panel or option display cannot be found on the deadstart tape.

RECOVERY

The following error messages can occur during a recovery deadstart.

<u>Message</u>	<u>Description</u>
EST/FNT LENGTHS CONFLICT, RECOVERY OF DEVICE IMPOSSIBLE.	The length of the FNT or EST of the system defined by CMRDECK conflicts with the system being recovered from disk. Attempt another deadstart without recovery (level 0).
SYSTEM TABLE FILE DESTROYED.	The system file being recovered from disk was destroyed. Recovery is impossible. Attempt another deadstart without recovery (level 0).
SYSTEM FILE PARITY ERROR.	The system cannot be recovered from disk due to a disk parity error. Attempt another deadstart without recovery (level 0).

Refer to Table 2-2 for information concerning recovery of mass storage devices during all levels of system deadstart.

SYSTEM LIBRARY BUILDING

The following error messages can occur while the system library is being built.

<u>Message</u>	<u>Description</u>
DETECTED IN DIRECTORY.	System file error. Start of system library was not found. Deadstart from another tape unit or at a different density. If the error persists, use another deadstart tape.
DETECTED IN CLD.	Disk resident overlay (OVL) or absolute (ABS) program is not formatted correctly. Deadstart from another tape unit or at a different density. If the error persists, use another deadstart tape.
DETECTED IN PLD.	System file error. Disk resident PP program is not formatted correctly. Deadstart from another tape unit or at a different density. If the error persists, use another deadstart tape.
DETECTED IN RCL.	Central memory resident overlay (OVL) or absolute (ABS) program is not formatted correctly. Deadstart from another tape unit or at a different density. If the error persists, use another deadstart tape.
DETECTED IN RPL.	Central memory resident PP program is not formatted correctly. Deadstart from another tape unit or at a different density. If the error persists, use another deadstart tape.
LIBRARY TABLE ERROR.	Blank entry was not found in the library table or in the directory within the field length at the deadstart control point. Try another deadstart. If the error persists, consult an analyst.
MASS STORAGE TOO SMALL FOR SYSTEM.	Try another deadstart using a larger system mass storage device or use a deadstart tape generating a smaller system library.
RANDOM ADDRESS ERROR.	Random address is not on file. Attempt another deadstart. If the error persists, consult an analyst.
RECORD NOT FOUND.	Attempt was made to place a nonexistent routine on an alternate system device. Try another deadstart. If the error persists, consult an analyst.

TABLE 2-2. MASS STORAGE DEVICE RECOVERY

Recovery Function	Level of Deadstart	Description of Error	Type of Device	System Response to Error	Operator Action
Read and verify the label on each mass storage device against that specified by the EQ definition for the device in CMRDECK.	0	Device being recovered is not ready and therefore, cannot be read.	Removable	Error code NR and status U set in MST; device is left unavailable.	None
			Nonremovable	Wait and retry. Error message is flashed on the right screen display.	Check to ensure that all nonremovable devices are ready.
		Read error occurred when attempting to read label (parity error, surface error, etc.).	All	Advance to next track and try to read. A predetermined number of tracks will be searched if error persists. If this number is exceeded, the device is treated as if a bad label existed - see description of Bad Label Error.	None
		Label verification error - the label was read but could not be verified. For example, label indicates device is first unit of a three-unit multispindle pack (MD-3), but units 2 of 3 and/or 3 of 3 are not present.	Nonsystem device	Error code CE and status U set in MST; device is left unavailable.	Examine MST display after deadstart is complete to determine corrective action.
			System device (nonremovable with system residence)	1. If permanent files do not reside on the device, it is initialized automatically using parameters in existing label. 2. If permanent files reside on the device, the following message appears on the right console display and deadstart processing halts. CONTINUING DESTROYS PFS - RECOVERY OF DEVICE IMPOSSIBLE.	None Type GO. to proceed. If this is done, the device is initialized using parameters in existing label (permanent files will be lost), or redeadstart without system on this device.
		Bad label - information read was not recognized as a label sector.	Nonsystem device	Error code LE and status U set in MST; device is left unavailable.	Device must be initialized after deadstart if it is to be used (refer to DSD command INITIALIZE).
	System device (nonremovable with system residence)		Device is initialized automatically. Any permanent files that reside on device will be lost.	None	
	1, 2, 3	Label verification error - the label was read but could not be verified. For example, label indicates device is first unit of a three-unit multispindle pack (MD-3), but units 2 of 3 and/or 3 of 3 are not present.	Removable (no active direct access files)	Error code indicates cause of error and status U set in MST; device is left unavailable.	Examine MST display after deadstart is complete to determine corrective action.
			Nonremovable or removable with active direct access files	The following message appears on the right console display and deadstart processing halts. RECOVERY IMPOSSIBLE ERROR ON DEVICE WITH ACTIVE FILES. NOTE Active direct access files are attached when checkpoint was taken (level 1, 2) or when deadstart was initiated. It is assumed that all nonremovable devices have active direct access files.	Perform level 0 deadstart or re-define configuration to match that of system being recovered.
	Chain removable devices with consecutive physical unit numbers (applies only to 841 (MD) and 844 (DI). This will allow a multispindle pack (for example, MD-3) to be mounted on devices defined in EST as single spindle devices (for example MD-1). Definition for devices in EST is changed to reflect a multispindle device.	0, 1, 2	Label verification error - label on remaining spindles of multispindle pack could not be verified.	Removable	All units are returned to their original status in EST and device with label specifying multispindle pack is left unavailable (U status set in MST). The labels on remaining devices that were chained are then checked to determine if they are valid.

TABLE 2-2. MASS STORAGE DEVICE RECOVERY (Cont'd)

Recovery Function	Level of Deadstart	Description of Error	Type of Device	System Response to Error	Operator Action
Read track reservation table (TRT) into central memory.	0	TRT could not be read successfully.	All	The following message appears on the right console display and deadstart processing halts. LENGTH OF DEVICES TRT BAD - RECOVERY OF DEVICE IMPOSSIBLE.	Type GO. to proceed. If this is done, the device is initialized using parameters in existing label; permanent files will be lost.
	1, 2	TRT could not be read successfully.	Removable (no active direct access files)	Error code TL and status U set in MST; device is left unavailable.	Examine the MST display after deadstart is complete to determine corrective action.
			Nonremovable or removable with active direct access files.	The following message appears on the right console display and deadstart processing halts. RECOVERY IMPOSSIBLE LENGTH OF DEVICES TRT BAD.	Perform level 0 deadstart and initialize the device.
Edit TRT to remove non-permanent file information	0	Edit was not successful. This could be caused by specifying a new RTK entry (flawed track) in CMRDECK.	All	The following message appears on the right console display and deadstart processing halts. PERM. FILE LINKAGE ERROR RECOVERY OF DEVICE IMPOSSIBLE.	Type GO. to proceed. If this is done, the device is initialized using parameters in existing label; permanent files will be lost. If RTK entry was specified, redeadstart and omit RTK entry.
Verify all mass storage devices in system to ensure permanent file integrity.	0	Two devices in same family have the same device number or the same bits set in the device mask, or two auxiliary devices have the same pack-name.	System device (non-removable with system residence)	The following message appears on the right console display and deadstart processing halts. RECOVERY IMPOSSIBLE EQxx EQyy CONFLICTING { DN, UM, PN.}	Perform one of the following: 1. Remove one of the specified devices and redeadstart. 2. Redeadstart and logically turn off one of the specified devices (via CMRDECK entry).
			Non-system device	Error code DN, UM, or PN and status U set in MST; both of the devices are left unavailable.	
Complete dayfile TRT chain from disk linkage.	0, 1, 2	Disk linkage indicates a new track and that track is already reserved.	All	The following message appears on the right screen: filnam LINKAGE ERROR.	Type GO; the file is truncated back to the TRT indicated EOI.
Complete dayfile TRT chain from disk linkage.	0, 1, 2	While completing the TRT linkage, a read parity error occurred.	All	The following message appears on the right screen: filnam PARITY ERROR.	Type GO; the file is truncated back to the TRT indicated EOI.

TABLE 2-2. MASS STORAGE DEVICE RECOVERY (Cont'd)

Recovery Function	Level of Deadstart	Description of Error	Type of Device	System Response to Error	Operator Action
Clear interlock data for direct access files.	0	Failure to read legal system sector. The TRT indicates track is beginning of direct access chain but first sector was not a system sector.	All	Increment count of direct access files purged. However, space for file is not released. Message appears in dayfile in following format. EQxxnnnnDIRECT ACCESS FILES PURGED. xx EST ordinal of device nnnn Number of files purged.	Examine dayfile after deadstart completes. Message described in preceding column indicates the number of direct access files purged.
		Interlock data specified file was in WRITE mode and last sector for file in TRT was not an EOI sector.	All	Clear interlocks for file and rewrite system sector. Issue following message to error log and system dayfile: LENGTH ERROR filenam uindex. filenam Name of file on which error was encountered. uindex User index of file owner. Also, increment count of direct access file errors. The following message appears in the system dayfile. EQxxnnnnDIRECT ACCESS FILE ERRORS. xx EST ordinal of device. nnnn Total number of length errors.	Examine system and error log dayfiles after deadstart completes. The number of LENGTH ERROR messages issued and the count of DIRECT ACCESS FILE ERRORS should match. To recover files in error: 1. ATTACH old file. 2. PURGE old file. 3. DEFINE new file with old file name. 4. COPY old file to new file.
Recovering queued files.	0	Last sector of file specified by TRT is not an EOI sector.	All	The following message is issued to the dayfile and error log: QF LENGTH ERROR filnam. filnam Name of file being recovered. The following message is issued to the dayfile at the end of recovery: EQxx nnnn QUEUED FILE ERROR COUNT. xx EST ordinal of device nnnn File count	The utility QREC issues messages to the system dayfile indicating the location and job name of all files in error during the requeue operation. The message format is filnam TKxxxx LENGTH ERROR.

The operator communicates with the operating system through the console keyboard. The figure below shows the keyboard on a CYBER 170 Series console. The PRESENTATION CONTROL switch, located to the right of the spacebar, allows the operator to display a left screen display only, a right screen display only, or both left and right screen displays of reduced size on a split screen. When in the LEFT position, only those displays referred to in the following sections as left screen displays may appear. Only those referred to as right screen displays appear when the switch is in the RIGHT position. A split screen showing both the left and right displays as requested by the operator appears when the switch is in the middle or MAINTENANCE position. If a 6612 dual screen display console is used, the requested displays appear simultaneously on the left and right screens respectively; there is no PRESENTATION CONTROL switch on the keyboard.

Each keyboard entry to DSD is a single line usually ending with a period. As characters are entered from the console, the accumulated entry is displayed on the lower left portion of the left display screen. When the carriage return (CR) key is pressed, a command is examined for legality. If acceptable, the command is processed and the keyboard entry is cleared. If the command is not acceptable, an error message appears above the entry. The operator can then press either the erase key (left blank key) which clears both the command entered and the error message, or the backspace (BKSP) key which deletes only the last character displayed. Using the BKSP key allows the operator to delete the entry to the position of the error and enter the correction.

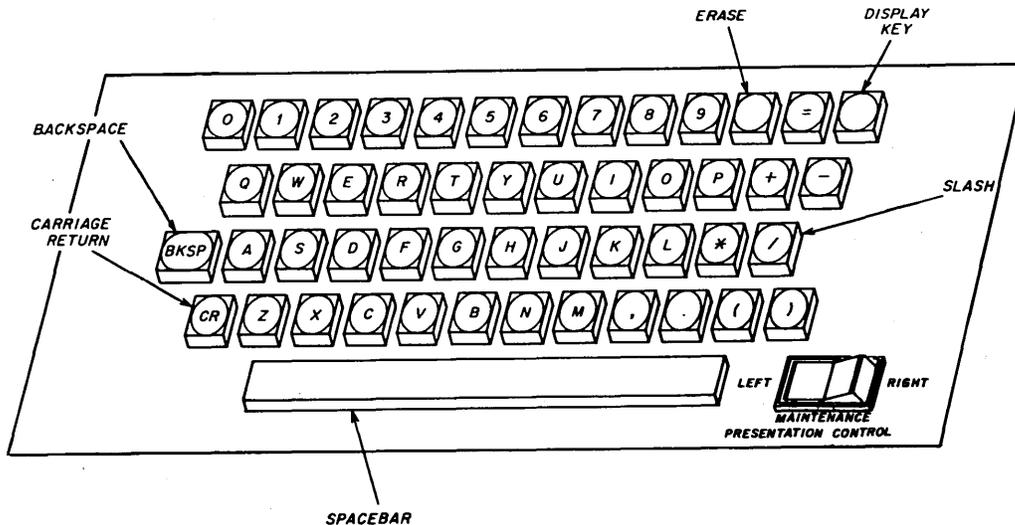


Figure 3-1. Console Keyboard

CONSOLE OPERATION UNDER DSD

The operator uses the keyboard to initiate and control equipment assigned and job progress. DSD processes keyboard entry of commands as follows: as the operator types each character at the console, DSD checks the accumulated entry for a match against the table of possible commands. When DSD has received enough characters to recognize the command, it will automatically fill in the remaining portion of the

command. In general, DSD fills in the rest of the command after 3 to 5 characters have been entered. If the character entered is not within the legal range, or not recognized as part of a legal command, it is rejected and not displayed.

Example:

To request that the error log dayfile be displayed on the left console screen, the appropriate DSD command is A, ERROR LOG. The operator begins by typing A. DSD checks this input but cannot recognize the command since seven other commands also begin with the letter A. The operator then enters the comma (,). Because two other commands also begin with these characters, DSD still cannot recognize the command. However, when the operator enters E, the command becomes unique and DSD fills in the remainder of the entry on the display (RROR LOG.). If the operator does not wait for DSD to complete the command, but continues to type in the remaining characters himself, those characters will be ignored.

DSD signals that a keyboard entry is complete by intensifying individual characters in rotation. At this time, the operator can press the carriage return key. DSD checks the command and begins processing if it is found to be acceptable. If the command is processed successfully, it is erased from the display screen. However, if DSD must wait for a resource to become available (such as a channel), or if the command was not acceptable, one of the following messages is displayed above the command.

<u>Message</u>	<u>Meaning</u>
ILLEGAL ENTRY.	Command not recognized by DSD. Operator must either correct or reenter the command.
DISK BUSY.	DSD is waiting for an overlay to be loaded from a mass storage device.
PPU BUSY. †	DSD is waiting for a PPU to be assigned so that it can process a command.
MTR BUSY. †	DSD is waiting for a response from the system.

If such a message persists for any length of time, the operator can terminate the entry by pressing the left blank (erase) or BKSP (backspace) key.

SPECIAL CHARACTERS

In addition to the command entries, the following keys have special meaning to DSD when they are entered as the first character.

<u>Key</u>	<u>Action Initiated</u>
*	Alternates display control between DSD and DIS each time the key is pressed.
=	Alternates left screen memory display (C, D, F, or G) between absolute locations and those relative to a control point each time the key is pressed. However, unless a control point memory display is currently selected (refer to Storage Displays in section 4) only absolute locations are displayed. That is, pressing the = key will have no effect.

†If the message is preceded by LOG -, the command has been executed but not yet logged in the system dayfile and/or error log. (Refer to DSD Commands, section 3.)

Key

Action Initiated

+	Advance left screen display as follows:
Memory displays (C, D, F, G)	Advance display address by 40 octal locations.
E display	Advance to next page of equipment status display.
H display	Advance to next page of FNT display.
N display	Advance file displayed by one sector.
P display	Advance to next page of P display.
R, T displays	Advance to next page of R or T display.
A, J, K, L displays	Advance control point number.
-	Decrements left screen display as follows:
Memory displays (C, D, F, G)	Decrement display address by 40 octal locations.
E display	Decrement equipment status display by one page.
H display	Decrement FNT display by one page.
N display	Backspace file displayed by one sector.
P display	Decrement P display by one page.
R, T displays	Decrement R or T display by one page.
A, J, K, L displays	Decrement control point number.
(Advances right screen display as described for + (plus) character.
)	Decrements right screen display as described for - (minus) character.
/	Advances left screen memory display by the value in the lower 18 bits of the first word displayed.
right blank (display key)	Advances the left screen display sequence established by SET,ssss command (refer to section 4).
CR (carriage return)	Sets the repeat entry flag; message REPEAT ENTRY is displayed on the error message line of the left screen. The subsequent command entry is processed but is not erased after completion. That command is processed each time the carriage return key is pressed. To clear the repeat entry mode, press the left blank (erase) key.

The following keys are interpreted as control characters by DSD.

<u>Key</u>	<u>Action Initiated</u>
left blank (erase)	Clears current keyboard entry and any resultant error messages.
BKSP (backspace)	Deletes last character displayed and clears error message (if one exists).
CR (carriage return)	Initiates processing of an entered command.

DSD COMMANDS

After the system has successfully been deadstarted, the operator can enter the DSD commands necessary to provide optimum performance and reliability for its users. There are eight general categories of DSD commands available for this purpose:

- Dayfile Commands
- Job Processing Control Commands
- Peripheral Equipment Control Commands
- BATCHIO Buffer Point Commands
- Subsystem Control Commands
- System Control Commands
- Memory Entry Commands
- Channel Control Commands

It should be noted that although all DSD commands (approximately 100) are generally available to the operator, many of them are seldom, if ever, used in a normal production environment. In fact, a large number of the DSD commands are typically used only by the system analyst for maintenance or debugging purposes. These commands include all memory entry and channel control commands as well as several commands in the other categories listed.

When unusual problems arise, it is often a good rule that the operator not attempt corrective action unless he has considerable experience in that area or has received specific instructions relating to the current problem. If not, he should consult a systems analyst to determine corrective action. Attempts to correct a system problem can often destroy information required to eliminate repetition of the problem.

To assist customer engineers in maintaining the hardware, the first 25 characters of the following commands are entered into the error log after each execution.

OFFxx.
ONxx.
99.
Memory Entry Commands
Channel Control Commands

These commands are prefixed by the characters DS in the error log but otherwise appear exactly as they are entered by the operator. This feature can be enabled and disabled using the 99. command (refer to System Control Commands). Refer to section 1 in part III of the installation handbook for instructions on modifying DSD to include logging of any command in the system dayfile/error log.

The manner in which the DSD commands are entered and the use of special keyboard characters is described at the beginning of this section. In addition, command formats are fixed field, but embedded blanks are allowed in octal fields. Leading spaces in operator entries are not allowed.

Since the commands that follow are arranged according to function rather than alphabetically, the operator may wish to use the alphabetical command index provided inside the front cover for a quick page reference.

DAYFILE COMMANDS

The following are the dayfile control commands available to the operator. Refer to section 4 for a description of the dayfile displays.

<u>Command</u>	<u>Description</u>
A.	Resets the A display to the beginning of the dayfile buffer. Since only the most recent dayfile messages appear on the A display, entering this command allows the operator to examine previous dayfile messages. If the A display is not currently selected, entering this command brings the system dayfile (A) display to the left console screen and resets the display to the beginning of the dayfile buffer.
A, .	Displays the system dayfile buffer on the left console screen. This command also resets the A display to the system dayfile when the error log dayfile, account dayfile, or one of the control point dayfiles are currently being displayed. Note that the + and - keys are used to page the A display through each control point, forward and backward, respectively.
A, n.	Displays the dayfile buffer for a control point, specified by n, on the left console screen. Note that + and - keys can be used to page the A display to different control points, forward and backward, respectively.
DAYFILE, xx.	Requests that system dayfile be dumped to equipment defined by EST ordinal xx. If equipment specified is a mass storage device, the dayfile will be dumped to the print queue.
A, ACCOUNT FILE.	Displays the account dayfile buffer on the left console screen. Refer to section 4 for description and illustration of account dayfile display.
ACCOUNT, xx.	Requests that account dayfile be dumped to equipment defined by EST ordinal xx. If equipment specified is a mass storage device, the account dayfile is dumped to the print queue.
A, ERROR LOG.	Displays the error log dayfile buffer on the left console screen. Refer to section 4 for a description and illustration of the error log dayfile.
ERRLOG, xx.	Requests that error log dayfile be dumped to equipment defined by EST ordinal xx. If equipment specified is a mass storage device, the error log dayfile is dumped to the print queue.

JOB PROCESSING CONTROL COMMANDS

Under normal circumstances, control over job processing is performed automatically by the system. Although the following commands may not be used frequently, they provide an added measure of control over job processing. Note that several of the commands described here change internal system parameters which control job scheduling and processing. Give careful consideration to their use since job flow and overall system performance can be affected. Refer to the individual command descriptions for further information.

<u>Command</u>	<u>Description</u>
LOAD, xx, yy.	Requests that a job be loaded from equipment defined by EST ordinal xx (normally tape unit). The job is assigned a numeric identifier yy which can range from 00 to 67 octal. Examine the E display (refer to section 4) to determine the EST ordinal of the equipment to be used.
CRxx, yy.	Assigns a numeric identifier yy to the card reader defined by EST ordinal xx. The value of the identifier can range from 00 to 67 octal. All subsequent jobs loaded from card reader xx will be assigned the identifier yy.
ENID, yy, zzz.	Enter identifier. This command assigns a numeric identifier yy to a queue type file defined by FNT ordinal zzz. The FNT ordinal is determined by examining the H display (refer to section 4). Valid queue type files to which an identifier may be assigned are listed in the H display as IN (input), PR (print), and PH (punch). The value of the identifier can range from 00 to 67 octal.
CPxx, yy.	Assigns a numeric identifier yy to the card punch defined by EST ordinal xx. The value of the identifier can range from 00 to 67 octal. In this manner, all files in the punch queue with an identifier equal to yy are directed to card punch xx. Refer to description of LOAD, CR, and ENID commands to assign an identifier to a job or queue type file.
LPxx, yy. or LQxx, yy. or LRxx, yy.	Assigns a numeric identifier yy to the line printer defined by EST ordinal xx. The value of the identifier can range from 00 to 67 octal. In this manner, all files in the print queue with an identifier equal to yy are directed to line printer xx. Refer to description of LOAD, CR, and ENID commands to assign an identifier to a job or queue type file. The LP command directs output to either 512 or 580 line printers. The LQ command directs output only to a 512 line printer and LR to a 580 line printer.
n. ROLLOUT.	Removes job currently assigned to control point n and places it in the rollout queue. The queue priority for the job is set to 1. This is a special queue priority value which indicates that the job will not be scheduled back to a control point automatically. That is, operator action is required to return the job to a control point. This can be done by using the ROLLIN, xxx. command or resetting the job's priority with either the ENQP, xxxx, yyy. or ENPR, xxxx, yyy. commands.

<u>Command</u>	<u>Description</u>
n. ROLLOUT, xxxx.	Removes job currently assigned to control point n and places it in the rollout queue for xxxx job scheduler delay intervals. The job is automatically scheduled back to a control point after this period of time. However, the operator can return the job to a control point before the time specified by xxxx has elapsed through the use of the ROLLIN, xxx., ENQP, xxxx, yyy., or ENPR, xxxx, yyy. commands. The amount of time required for one job scheduler interval is initially set in the IPRDECK but may be changed via the DELAY command (JS parameter) described later in this section.
ROLLIN, xxx.	Allows the job defined by FNT ordinal xxx to be scheduled to an available control point. This is done by assigning maximum queue priority (MXPS) to the job. Examine the H display (refer to section 4) to determine the FNT ordinal of the job.
n. CKP.	Checkpoints job currently assigned to control point n. The checkpoint information includes a copy of the job's central memory, the system information used for job control, and the name and contents of all local files currently assigned to the control point. It is the responsibility of the user's job to establish a magnetic tape or mass storage permanent file to receive the checkpoint information. Otherwise, checkpoint information is automatically written to a local file named CCCCCC and will not be available if a restart becomes necessary (RESTART is also user-controlled and is accomplished via control statement). Use of this command should be discreet (typically used at the request of or by the site analyst) since job and system overhead are increased. Refer to section 12 in the Reference Manual Volume 1 for supplementary information concerning the checkpoint/restart feature available to users.

NOTE

Subsystems or jobs with a queue priority greater than MXPS or less than MNPS may not be checkpointed. †



The following job control commands affect scheduling and execution of jobs in the system. These commands are normally used only by the site analyst although the operator may also be required to use them periodically. However, the operator should not enter these commands unless specifically directed to do so. Improper use of these commands can drastically hamper job flow as well as system performance. In certain cases, jobs may be lost.

† The released values for MNPS and MXPS are 0100 and 7760 octal, respectively. These values are subject to future change.

<u>Command</u>	<u>Description</u>
n. ENTL, xxxxx.	Enter time limit of xxxxx for job currently assigned to control point n. The value of xxxxx can range from 0 - 77777 octal (values 77770 to 77777 are considered infinite). The value entered is rounded up to a multiple of 10 ₈ . This command overrides the time limit specified when the job entered the system. The current time limit can either be increased (up to maximum value) or decreased. However, if the value of xxxxx is less than the current elapsed time, the job aborts.
n. ENPR, xx.	Enter CPU priority xx for job currently assigned to control point n. The value of xx can range from 1 to 70 octal. This command overrides the CPU priority set by the SERVICE command. The current CPU priority can be either increased (up to maximum value) or decreased. Note that this command is valid only if the queue priority for the job does not exceed MXPS.†
n. ENQP, xxxxx.	Enter queue priority of xxxxx for the job currently assigned to control point n. The value of xxxxx can range from MNPS† (minimum queue priority) to MXPS (maximum queue priority).† This command overrides the queue priority established by the QUEUE command. The current queue priority can be either increased or decreased. This command is valid only if the current queue priority for the job does not exceed MXPS.
ENQP, xxxxx, yyy. or ENPR, xxxxx, yyy.	Enter queue priority of xxxxx for a queue type file defined by FNT ordinal yyy. The FNT ordinal is determined by examining the H display (refer to section 4). The value of xxxxx can range from MNPS to MXPS.† The value specified overrides the current queue priority for the file. The current queue priority can either be increased or decreased using this command.
n. RERUN, xxxxx.	This command terminates the job currently assigned to control point n, then reruns the job from the beginning with a queue priority of xxxxx. The job must be in rerun status as set by the RERUN control statement or macro. † The value of xxxxx can range from MNPS to MXPS. This value overrides the current queue priority for the job.
QUEUE, ot, qt, qp ₁ xxxx, ..., qp _n xxxx.	This command is used to alter the queue priorities associated with the input, rollout, and output queues for each job origin type. Examine the S display (refer to section 4) to determine the priority values currently associated with each job origin type.

<u>ot</u>	<u>Job Origin Type</u>
SY	System
BC	Local batch
TX	TELEX
EI	Export/Import (remote batch)
MT	Multiterminal

† The released values for MNPS and MXPS are 0100 and 7760 octal, respectively. These values are subject to future change.

Command

Description

<u>qt</u>	<u>Job Queue Type</u>
IN	Input
RO	Rollout
OT	Output
<u>qp</u>	<u>Queue Priority</u>
LPxxxx	Lowest priority at which a job can enter the queue and still be aged (MNPS < xxx < MXPS).†
OPxxxx	Original (entry) priority. This is the priority associated with the job when it initially enters the specified queue. The value of xxxx is normally within the boundaries specified by LP and UP.
UPxxxx	Highest priority a job can reach in the specified queue; aging stops when this priority is reached. The job is also given this priority when initially assigned to a control point. The value of xxxx is normally greater than LP and OP but cannot exceed MXPS.†
INxxxx	Number of scheduler cycles before incrementing the job priority by one.

The priority associated with each queue is established via QUEUE command entries in the IPRDECK for each job origin type. These entries normally reflect the ideal queue priorities for the job mix of the particular installation. The values specified in the IPRDECK are considered critical to optimum system performance and are not normally altered. However, when necessary, the changes are usually temporary and the original values will be reset. The following space is provided to record the original values (specified in the S display) for that purpose. For additional information concerning the QUEUE command, refer to section 5 in part II of the Installation Handbook.

ORIGIN TYPE	PRIORITIES FOR EACH QUEUE TYPE											
	INPUT QUEUE				ROLLOUT QUEUE				OUTPUT QUEUE			
	OP	LP	UP	IN	OP	LP	UP	IN	OP	LP	UP	IN
SY												
BC												
TX												
EI												
MT												

† The released values for MNPS and MXPS are 0100 and 7760 octal, respectively. These values are subject to future change.

Command

SERVICE, ot, p₁xxxx,
..., p_nxxxx.

Description

This command is used to alter the service limits associated with each job origin type.

ot Job Origin Type

SY System
BC Local batch
TX TELEX
EI Export/Import (remote batch)
MT Multiterminal

p_i Service Limits

PRxx CPU priority ($1 \leq xx \leq 70_8$). Jobs with highest priority get CPU first. All job origin types except SY and MT are normally set to the same CPU priority. System jobs (SY) are run at the lowest CPU priority. Multiterminal (MT) jobs are normally set to a higher CPU priority since they require little CPU time.

CPxx CPU time slice (milliseconds *64). This parameter specifies the maximum amount of time a job of the specified origin type can use the CPU before its queue priority is set to the lower boundary.

CMxxxx Central memory time slice in seconds. This parameter specifies the maximum amount of time a job of the specified origin type can remain at a control point before it becomes eligible to be rolled out. A job is not necessarily rolled out when its time slice is exceeded. It is set to a lower priority and then may be replaced by a job of higher priority. The value of xxxx can range from 0 to 7777 octal.

NJxxxx Maximum number of jobs. For TELEX origin jobs, this parameter specifies the number of terminals that can be logged into the system. The NJ parameter has no meaning for other job origin types.

FLxxxx Maximum field length/100₈ for any job of the specified job origin type. Jobs with field length requirements that exceed this value are not scheduled to a control point. It is important to note that this parameter only effects the scheduling of jobs to a control point. Jobs currently assigned to a control point that exceed this value will not be aborted. However, if the job is rolled out, it will not be scheduled back to a control point. This parameter is

P_i

Service Limits

typically used to limit the memory requirement for jobs of a specific job origin type during certain hours of the day. For example, the FL parameter may be used to specify a maximum field length for all batch origin jobs between the hours of two and four in the afternoon.

AMxxxx Maximum field length/100₈ for all jobs of the specified job origin type. This parameter is used to partition central memory by limiting the total field length available to each job origin type. For example, if scheduling a job to a control point exceeds the field length specified for its job origin type, it may not be scheduled until the required field length is available. This means that a lower priority job from a different origin may be scheduled first. However, a job that would normally exceed the field length for its job origin type can be scheduled to a control point if there are not enough jobs to fill the field length specified for another job origin type. The system will always attempt to use central memory to its greatest capacity.

ECxxxx † Maximum ECS/1000₈ for any job of the specified job origin type.

EMxxxx † Maximum ECS/1000₈ for all jobs of the specified job origin type.

FCx Number of permanent files allowed where x is used to specify the corresponding octal values shown in the following table.

<u>x</u>	<u>Limit value</u>
0	Unlimited
1	10
2	20
3	30
4	40
5	50
6	100
7	Unlimited

†Not currently used by the system but provided for future expansion of validation control.

P_i

Service Limits

CSx

Cumulative size in PRUs allowed for all indirect access permanent files; x is used to specify the corresponding octal values shown in the following table.

<u>x</u>	<u>Limit value</u>
0	Unlimited
1	1000
2	2000
3	5000
4	10000
5	50000
6	100000
7	Unlimited

FSx

Size in PRUs allowed for individual indirect access permanent files; x is used to specify the corresponding octal values shown in the following table.

<u>x</u>	<u>Limit value</u>
0	Unlimited
1	10
2	20
3	30
4	40
5	50
6	60
7	Unlimited

DSx

Size in PRUs allowed for individual direct access permanent files; x is used to specify the corresponding octal values shown in the following table.

<u>x</u>	<u>Limit value</u>
0	Unlimited
1	1000
2	2000
3	5000
4	10000
5	50000
6	100000
7	Unlimited

The service limits associated with each job origin type are established via SERVICE command entries in the IPRDECK. These entries normally reflect the ideal service limits for the job mix of the particular installation. The values specified in the IPRDECK are important to optimum system performance and are not normally altered. However, when changes are necessary they are usually temporary and the original values will be reset. The following space is provided to record the original values for that purpose. For additional information concerning the SERVICE command, refer to section 5 in part II of the Installation Handbook.

ORIGIN TYPE	SERVICE LIMITS									
	PR	CP	CM	NJ	FL	AM	FC	CS	FS	DS
SY										
BC										
TX										
EI										
MT										

DELAY, t_1 xxxx, ..., t_n xxxx.

This command is used to alter current system delay parameters. Examine the S display (refer to section 4) to determine the current delay parameter values.

t_i	Delay
JSxxxx	Job scheduler interval in seconds. This parameter specifies the interval at which the job scheduler and priority increment routines are called. The scheduler may also be called at other times.
CRxxxx	CPU recall period in milliseconds. This parameter specifies the amount of time a job remains in recall when an RCL request is placed in RA+1.
ARxxxx	PPU auto recall interval in milliseconds. This parameter specifies the time interval at which peripheral processor units (PPUs) in auto recall are recalled.
JAxxxx	Job advance interval in milliseconds. This parameter specifies the time interval at which the system checks to determine if the advance job routine (1AJ) has been called.
CSxxxx	CPU job switch interval in milliseconds. This parameter specifies the amount of time the CPU executes any one job if several jobs of equal CPU priority all require the CPU.
TCxxxx	Threshold count for corrected Single Error Correction Double Error Detection (SECDED) single bit errors. This parameter specifies the number of corrected single bit errors that will be detected prior to entering a SECDED message in the error log.

The value for each system delay parameter is established via a DELAY command entry in the IPRDECK. This entry normally reflects the ideal parameter values for the job mix of the particular installation. The following space is provided to record the original values (specified in the S display) in the event that any are altered temporarily. For additional information concerning the DELAY command, refer to section 5 in part II of the Installation Handbook.

Command

Description

DELAY VALUES	
JS	
CR	
AR	
JA	
CS	
TC	

MSAL, C, f₁xx, . . . , f_nxx.

Assign job files of type f_i to mass storage device defined by EST ordinal xx. The mass storage device specified must be nonremovable and its current status must be ON. Examine the E display to determine the EST ordinal and status of the device to be used. The MST (E, M.) display can be examined to determine if the device is nonremovable. If the C parameter is entered, the values specified by the MSAL entry in the IPRDECK (if any) are cleared. If the C parameter is omitted, and an MSAL entry was specified in the IPRDECK, the new values are added to those already specified.

<u>f_i</u>	<u>File Type</u>
LO	local
IN	input
OT	output
RO	rollout
LG	LGO

PURGE, xxx.

Purge queue type file defined by FNT ordinal xxx from the system. The FNT ordinal is determined by examining the H display (refer to section 4).

PURGEALL, t.

Purge all files of queue type t from the system.

<u>t</u>	<u>Type</u>
I	Input
O	Output
P	Punch
R	Rollout (sets error priority and is aborted when rolled back in)
T	Timed/event rollout (sets error priority and is aborted when rolled back in)

Command

Description

n. DROP.

Drops the job currently assigned to control point n. The job's current output and dayfile (if any) are printed and the job is eliminated from the system. Extreme caution should be observed in the use of this command. Before pressing the carriage return key (CR), check to ensure that the correct control point number has been specified and that the job is still at the same control point.

The following job control commands are used to respond to a job currently assigned to a control point.

n. COMMENT. ccc...ccc.

Enters comment ccc...ccc (120 characters maximum) in the dayfile for control point n.

or

n. *ccc...ccc.

n. CFO. ccc...ccc.

This command allows the operator to send a message ccc...ccc (36 characters maximum) to the program currently assigned to control point n. The program pauses while the operator enters the message which is placed in locations RA+70₈ through RA+74₈ of the program's field length.

n. ONSWx.

Turns on sense switch x ($1 \leq x \leq 6$) at control point n. Refer to Subsystem Control Commands in this section for definition of sense switches that can be set for the Export/Import, BATCHIO, and TELEX subsystems.

n. OFFSWx.

Turns off sense switch x ($1 \leq x \leq 6$) at control point n.

n. GO.

Clears the pause bit at control point n. A job may set the pause bit if an error is encountered or if an operator response is required. The pause bit causes the job to relinquish use of the CPU until it is cleared via entry of this command.

The following job control commands apply only to jobs of TELEX origin (that is, jobs that originate from a time-sharing terminal). TELEX must be active at control point 1.

MESSAGE, ccc...ccc.

Changes current header message output to terminal when user logs-in to ccc...ccc (48 characters maximum). This message also appears at the TELEX control point on the B display (refer to section 4).

DIAL, nnnn, ccc...ccc.

Sends message ccc...ccc (48 characters maximum) to terminal currently using line number nnnn. Examine the T display (refer to section 4) to determine the appropriate line number. The message will not interrupt job execution or output. The terminal user will receive the message after the next READY status.

WARN, ccc...ccc.

Sends message ccc...ccc (48 characters maximum) to all terminals currently logged into the system. The message is received after the next READY status. Each subsequent terminal to log into the system will also receive this message. This continues until either a new message is entered or the message is cleared (refer to following command). In addition, the current message also appears at the TELEX control point on the B display.

Command

Description

It should be noted that the message specified by ccc...ccc is only part of the information transmitted to the time-sharing terminals. That is, the system automatically sends a statement that precedes the message. This statement appears as follows:

hh. mm. ss. WARNING

current time (hours, minutes, seconds)

This command is typically used to notify TELEX users of an interruption in service or system shutdown. For example, if the operator enters

WARN, SYSTEM SHUTDOWN IN FIVE MINUTES.

the following information would be transmitted to all terminals

hh. mm. ss. WARNING

SYSTEM SHUTDOWN IN FIVE MINUTES.

WARN.

Clears message entered by the WARN, ccc...ccc. command. Unless this command is entered, the existing message (if any) will continue to be transmitted to each new terminal that logs into the system.

PERIPHERAL EQUIPMENT CONTROL COMMANDS

The commands described in this category provide overall control of the peripheral equipment available to the system. The operator should become familiar with the following DSD displays which are closely associated with the use of these and other commands described throughout this section.

- Equipment status table (EST) display
- Mass storage table (MST) display
- Tape status display
- Resource mounting preview display

A complete description of each of these displays is given in section 4 of this manual.

Command

Description

n. ASSIGN, xx.

Assigns equipment defined by EST ordinal xx (normally tape unit) to job at control point n. This command is entered in response to a flashing REQUEST message at that control point. Use of this command for assignment of a tape unit should not normally be required because tape assignment is performed automatically when a volume serial number (VSN) is specified in the job request. However, if a VSN is not specified in the job request for a labeled or unlabeled tape, the REQUEST message appears at the job's control point (on B display), and the ASSIGN command must be entered to assign a tape unit to the job.

Command

Description

VSN, xx, aaaaaa. †

Assigns volume serial number (VSN) aaaaaa to an unassigned magnetic tape unit defined by EST ordinal xx. This command allows the operator to specify a 1- to 6-character VSN for a mounted, unlabeled tape in order that it may be assigned and referenced automatically. For example, when a job specifies a VSN in the request for an unlabeled tape, an entry for that job appears in the resource mounting preview display (E,P.). This display indicates the FNT ordinal of the job, the type of tape unit, 7-track (MT) or 9-track (NT), on which the tape is to be mounted, the required VSN, user number of the job, and the required write ring status (IN or OUT). If the correct tape is not currently mounted, the operator mounts the tape on an available unit (ensuring that track type and write ring status are correct), readies the unit, and then enters this command. The system equates the VSN entered by the operator with that specified by the job and assigns the tape automatically upon demand.

If a job specifies a VSN in the request for a labeled tape, assignment occurs automatically, without operator intervention, unless the correct tape is not mounted. In this case, an entry is formed in the resource mounting preview (E,P.) display which describes the tape to be mounted. When the tape is mounted and the tape unit made ready, assignment occurs automatically without additional operator intervention.

If two or more unassigned tapes having identical VSNs are mounted on units of the same track type (MT or NT), a flashing REQUEST message appears on the B display and the operator must assign one of the tapes using the ASSIGN command. If the duplicate VSNs are SCRATCH, the resource executive routine RESEX assigns one automatically.

NOTE

It is not possible to specify a VSN of SCRATCH with this command since only 6 characters may be used to define a VSN. To define a scratch tape (used to satisfy scratch VSN requests), refer to the description of the SCRATCH, xx, or VSN, xx, . command.

SCRATCH, xx.

Declares the tape mounted on an unassigned magnetic tape unit, defined by EST ordinal xx, to be a scratch tape. This command enables a tape to be available to satisfy scratch VSN requests and still be assigned by

†Special characters cannot be entered using this command. If a special character is encountered in aaaaaa, the VSN entered is truncated at the character preceding the special character.

Command

Description

its original VSN. Thus, the VSN defined on the tape (in VOL1 label) is not redefined as scratch although the VSN will appear as SCRATCH on the tape status (E, T.) display.

Scratch status is retained for only one job assignment. This allows a tape to be used for scratch purposes on a temporary basis. For example, a job requests a tape mounted on the tape unit defined in this command by specifying the current VSN for that tape in the request. The tape is then assigned to the job as a scratch tape (the original VSN is retained and not made scratch). When that job releases the tape, SCRATCH status is cleared, and unless this command is entered again, that tape would not be assigned as a scratch tape in future requests. To determine if SCRATCH status is in effect for a tape, monitor the tape status (E, T.) display.

VSN, xx, .

Declares the tape mounted on an unassigned magnetic tape unit, defined by EST ordinal xx, to be a scratch tape. This command is similar in function to the SCRATCH, xx, command in that it enables a tape to be available to satisfy scratch VSN requests. However, if the tape is labeled and a write function is performed, the VSN specified in the VOL1 label will be rewritten as a scratch VSN, destroying the original VSN and making the tape available for future scratch VSN requests. The VSN also appears as SCRATCH on the tape status (E, T.) display.

VSN, xx.

Clears current VSN for magnetic tape unit defined by EST ordinal xx and then checks to determine if a VSN is specified in the VOL1 label of the tape mounted on that unit. This command is valid only if the tape unit specified is not currently assigned.

UNLOAD, xx.

Logically removes a magnetic tape unit or removable mass storage device from the operating environment while the operator dismounts a tape or disk pack. The device to be unloaded is defined by EST ordinal xx (examine the E display to determine EST ordinal).

Magnetic tape units: If a tape is currently assigned to a job, it cannot be unloaded. If this is attempted, the UNLOAD command is ignored and the following message appears on the left console screen

UNIT NOT AVAILABLE

Examine the tape status (E, T.) display before entering the UNLOAD command to determine

Command

Description

if the tape to be unloaded is currently assigned to a job. If the tape is not currently assigned, entering this command unloads the specified tape.

Mass storage devices: The UNLOAD command is effective only for mass storage devices defined as removable. The MST display (refer to section 4) indicates which mass storage devices are defined as removable. If a nonremovable device is specified, this command is ignored and the following message appears on the left console screen.

ILLEGAL EQUIPMENT

If a removable device is selected, the UNLOAD command prevents new users from accessing files on the device. Users currently accessing files on the device are allowed to continue. The COUNT field in the MST display indicates the number of users currently accessing files on the device. If COUNT is not zero (blank field) when UNLOAD is issued, the command is executed but the following message appears on the left display screen.

DEVICE STILL ACTIVE

The operator should monitor the MST display since he is given only 1 minute (approximately) in which to make the device physically unavailable after the UNLOAD command has been issued. If he is unable to do so because of users still accessing the device or any other reason, the system automatically activates the device again and allows new user access. If more time is desired in which to make the device not ready, enter the following command.

DISABLE, REMOVABLE PACKS. (CR)

If this is done, automatic label checking will not be performed for removable devices. Thus, the device cannot be activated again until the following command is entered.

ENABLE, REMOVABLE PACKS. (CR)

Refer to System Control Commands for a complete description of these commands.

Caution should be observed to ensure that all users have released their attached files on the device before it is physically removed from the system. If the pack is dismounted before all users have released their files (user count in MST display \neq 0) the following may occur:

Command

Description

- Mass storage device status errors
- Permanent file errors when pack is remounted at some later date.
- If another pack has been mounted, accesses made by a previously attached user may destroy information on the new pack or the user may retrieve information from the new device which he is not necessarily privileged to access. Mass storage device status errors are also possible in this situation.

It is also important to examine the current status codes listed in the MST display for the device to be removed. Delay removal of the device if a checkpoint request is currently pending (C status set in MST). When the check has completed, the C status is cleared and the device may then be removed.

OFFxx.

Logically turns off device defined by EST ordinal xx. This command allows the operator to logically remove a device from the operating environment. Examine the E, A. display to determine the EST ordinal and current status (ON or OFF) of the device. If xx specifies a mass storage device and the system library or temporary files (local, rollout, etc.) reside on that device, it should not be turned off. Examine the MST display (refer to section 4) to determine which mass storage devices have system residency or allow system allocation of temporary files. In addition, if an MSAL entry is currently specified for a mass storage device, it is cleared when that device is turned off. The MSAL designation is not reset automatically when the device is turned back on and must be reset manually (if necessary) via the DSD command MSAL (refer to Job Processing Control Commands).

ONxx.

Logically turns on device defined by EST ordinal xx. This command allows the operator to activate a device currently having OFF status in the EST. Examine the E, A. display to determine the EST ordinal and current status (OFF or ON) of the device.

<u>Command</u>	<u>Description</u>
DOWN, CHxx.	<p>Discontinues use of channel xx by tape units. The channel remains available for use by other devices. If channel xx is not assigned to the magnetic tape executive (MAGNET), the command is ignored and the following message appears on the left screen.</p> <p style="text-align: center;">ILLEGAL CHANNEL</p> <p>This command is normally used only by the site analyst or customer engineer. It should be used with caution since it directly affects the operation of system peripheral equipment.</p>
UP, CHxx.	<p>Resumes normal use of channel xx by tape units, reversing DOWN condition. If channel xx is not assigned to MAGNET, the command is ignored and the following message appears on the left screen.</p> <p style="text-align: center;">ILLEGAL CHANNEL</p> <p>This command is normally used only by the site analyst or customer engineer. It should be used with caution since it directly affects the operation of system peripheral equipment.</p>
TEMP, xx.	<p>Reverses current set or clear condition of temporary file status for mass storage device defined by EST ordinal xx. When temporary file status is set, the system can use the specified device for allocation of temporary (local, rollout, and so on) files. This command is not valid if the device specified is not available in the system or is defined as removable. Examine the MST display (refer to section 4) to determine:</p> <ol style="list-style-type: none"> 1. EST ordinal of device 2. If device is available in system 3. If device is defined as removable 4. If temporary file status is currently selected (set) for the device
FORMAT, xx.	<p>Reverses current format pending status for device xx. When this status bit is set, the full initialize status bit is automatically set also. However, if the format pending status is cleared, the full initialize status bit is not changed. The console must be unlocked before entry of this command is permitted.</p>

Command
INITIALIZE, xx, op.

Description
Reverses current setting of initialize option op for mass storage device defined by EST ordinal xx (examine E, A. display to determine correct EST ordinal).

<u>op</u>	<u>Level of initialization</u>
AL	Total initialize
PF	Permanent files
QF	Inactive queue files
DF	Inactive dayfile
AF	Inactive account file
EF	Inactive error log
FP	Format pack (844)

This command provides the capability to initialize and flaw tracks on any mass storage device during normal system operation.

Entry of this command does not in itself initialize the specified device. It merely sets initialize status for the device so that it may be initialized. However, if fast attach files (special system files) are active on the specified device and initialization level of AL or PF is specified, initialize status cannot be set until these files are returned. In this case, the message

FAST ATTACH FILES ON DEVICE.

appears at the system control point on the job status (B) display. Refer to the description of this message in appendix B for additional information.

The procedure involved in initializing a mass storage device is outlined later in this description. The following describes system activity when initialization occurs.

When the AL initialization option is specified, the label on the device to be initialized is either updated or a new label is created. If the label on the device is bad or cannot be recognized, a new label is created and all current data on the device is lost. If the label is found to be good, it is updated and all permanent file information is cleared. In this case, system library or temporary files (local, rollout, etc.) residing on the device are not disturbed. If the device being initialized is a master device, the system scans all other mass storage devices in the family that contain direct access files and releases the space for files with catalogs on this device. If the device being initialized contains direct access files, the system scans all other master devices and sets the catalog entries on those devices to indicate that the files were purged. All or part of the permanent file system can be initialized and then reloaded if necessary (refer to Permanent File Utilities in section 5).

Command

Description

The INITIALIZE command can also be used to reconfigure certain removable devices (841 and 844) to suit user needs. For example, if a user currently has two single unit 841 packs (MD-1's), both packs can be initialized and linked together to form a multispindle device (MD-2). However, this can only be done if the current single unit devices are mounted on consecutive physical unit numbers and the status for those devices is defined as removable; examine the MST (E, M.) display. In this case, the INITIALIZE command must be entered to set initialize status for each device to be chained. Current multispindle devices can also be initialized providing all packs that form the multispindle device are mounted in ascending order on consecutive physical unit numbers and the device (physical unit) on which each pack is mounted is defined as removable and available for access. Moreover, it is only necessary to enter the INITIALIZE command for the first unit of a current multispindle device. Examine the MST display to determine this information.

NOTE

Examine the COUNT field in the MST before entering the INITIALIZE command. The user count for the device must be zero before this command is valid.

The following procedure describes the steps necessary to initialize and (if necessary) flaw tracks on a mass storage device.

1. Enter the INITIALIZE command for the device(s) to be initialized followed by a carriage return. Examine the B display for the following message

REQUEST*K*DISPLAY.

Note the number of the control point displaying the message.

2. Activate the K display for that control point by typing

K, n. (CR) (n is the control point number)

The K display (Figure 3-2) appears on the left console screen. All parameters required to initialize and (if necessary) flaw the specified device are entered through the K display.

Command

Description

The top half of the K display lists all valid parameters used in initializing a device (under OPTION column). Refer to Table 3-1 for a description of each option. Flaw entries (RTK, STK, and TTK) are described on the bottom half of the display. Refer to Table 3-2 for additional information. The EST ordinal of the device to be initialized is listed in the center of the display under INITIALIZE EQUIPMENT.

3. Enter the INITIALIZE command for each additional device to be initialized. This can also be done before activating the K display. In either case, only the first device specified will initially be listed (by EST ordinal) in the K display. Thus, to update the K display to show additional devices, enter the following command

K.RERUN. (CR)

If more than one device is listed, they are initialized one at a time as they appear in the list from left to right. Multispindle devices (more than one EST ordinal) are considered one device.

4. The system has already checked the label on each mass storage device. If the label was found to be good, it is necessary to enter parameters (requested in messages that appear in the K display) to identify the device. This is to ensure that the device selected is indeed the correct device to be initialized. The messages appear automatically and are displayed until the correct parameter is entered. If an incorrect parameter is entered, it is ignored. Refer to Table 3-1 for a description of each parameter. Examine the MST display to determine the current parameter values.

The following possible messages may be displayed and the appropriate response should be entered. If none of these appear, the device label was not recognized or was found to be bad. In this event, proceed to step 5.

- ENTER OLD FAMILY NAME

This message appears only if more than one family of permanent file devices are currently active in the system. Enter the following response

Command

Description

K. FN=family name. (CR) †

- ENTER OLD DEVICE NUMBER

This message appears if the device to be initialized is a permanent file family device. Enter the following response

K. DN=device number. (CR) †

- ENTER OLD PACK NAME

This message appears only if the device to be initialized is an auxiliary device. Enter the following response

K. PN=pack name. (CR) †

- ENTER OLD USER NUMBER

This message appears only if the auxiliary device to be initialized is a private auxiliary device (associated with a specific user number). Enter the following response

K. UN=user number. (CR) †

If it is discovered that the wrong device was specified in the INITIALIZE command, initialize status for that device can be cleared by entering

K. CLEAR. (CR) †

The leftmost device in the list of devices to be initialized is cleared. One of the preceding messages will then be displayed for the next device to be initialized (if any) providing the label on that device is good.

5. When the following message appears on the K display, enter the parameters which specify the new characteristics to be associated with the device when it is initialized (refer to Tables 3-1 and 3-2).

ENTER PARAMETERS

The new parameters can be entered one at a time or as a string. For example:

†All parameter entries must be prefixed by K period (K.). However, when pressing (CR) after the first parameter entry, everything but the K. is erased. This allows another parameter to be entered without first having to enter K. If it becomes necessary to enter a DSD command during parameter entry, simply press the BKSP key to erase the K., enter the command, and then continue parameter entry by typing K. and the parameter.

Command

Description

K. option₁=value₁, ..., option_n=value_n. (CR)

or

K. option₁=value₁. (CR)
K. option₂=value₂. (CR)
K. option_n=value_n. (CR)

If flaw entries are to be specified (refer to Table 3-2), they must be entered singly as illustrated in the last example. If the label on the device being initialized was good, all current flaws on that device are normally recovered. However, if the label was not recognized or was bad, the flaw entries cannot be recovered and must be entered (if necessary) using this mechanism. A maximum of 20 octal flaw entries are permitted. In addition to RTK, TTK, and STK entries, the flaw information recorded in the utility sector on an 881 disk pack is read during initialization of 844 equipment and the appropriate areas automatically reserved by the system.

If the NP option is specified (NP≠0), the device is to be initialized as a multispindle device. In this case, the number of packs specified by NP indicate the number of spindles to be linked. This is the next n number of devices waiting to be initialized. Each device must be defined as removable and mounted on consecutive physical unit numbers. To determine if a device is defined as removable, examine the MST (E, M.) display (refer to section 4). If the units are configured correctly, the labels on each unit are checked. If any label is not recognized or is bad, that unit is free for initialization and chaining. However, if the label is good, the message

ENTER IDENTITY OF EQxx

appears in the K display (xx is the EST ordinal of the device). One of the following responses is required

- K. FN=family name, DN=device number. (CR)
- K. DN=device number. (CR)
- K. PN=pack name. (CR)
- K. PN=pack name, UN=user number. (CR)

This is a precautionary measure to ensure that the devices specified are the correct devices to be chained.

6. After all the necessary parameters have been entered for a specific device, enter the following command to proceed with initialization

K. GO. (CR)

If there are remaining devices waiting to be initialized, steps 4 through 6 of this procedure are repeated for each device.

```

*** MASS STORAGE DEVICE INITIALIZATION ***

CURRENT INITIALIZATION OPTIONS
*TOTAL*
OPTION VALUE  DESCRIPTION
FM = 0        FAMILY NAME/ PACK NAME
              FM = PACK NAME FOR TYPE -X
UN = 0        USER NUMBER
TY = 0        ACCESS TYPE
DM = 0        DEVICE MASK
SM = 0        SECONDARY MASK
NC = 0        CATALOG TRACKS
EQ = 0        EST ORDINAL OF DEVICE
NP = 0        NUMBER OF PACKS
DN = 1        DEVICE NUMBER
              INITIALIZE EQUIPMENT
              {list of equipment to be initialized}

RTK,STK AND TTK ENTRIES, ENTER SINGLY
GENERAL FORMAT- XTK=A.
WHERE, *XTK* IS-
RTK = RESERVE TRACK
TTK = TOGGLE TRACK
STK = SET LOGICAL TRACK
AND *AM* = EQUIPMENT FORMAT-
DA - T000,G0,S000
DB - P00,H00,S000
DC - U0,G00,A00000
DD - C000,S000
DE - A000000 = ADDR/100
DF - C000,S0000
DH - C0000,S0000
DI - C000,T00,S00
MD - C000,S0000
LIMIT = 200 ENTRIES.

```

Figure 3-2. K Display for INITIALIZE Command

TABLE 3-1. DEVICE DEFINITION OPTIONS †

Option	Description
FM=	1 to 7 character family name. Specifies the permanent file family in which the initialized device is to be included. Default is no family name. If TY=X, this option specifies a 1 to 7 character packname to be associated with an auxiliary device.
UN=	1 to 7 character user number. This option is specified only when initializing an auxiliary device (TY=X). If specified, the device is considered to be a private auxiliary device. Only the user number specified will be allowed to create files on the device (perform SAVE, REPLACE, or DEFINE requests).
DM=	Three octal digit device mask (0 to 377). This option is required whenever a permanent file master device is being initialized. It defines which users will have this device as their master device. This option cannot be entered if TY=X.
SM=	Three octal digit secondary device mast (0 to 377) used to control the residence of direct access files. This option is only meaningful on family devices.

† Device definition may be changed only if AL initialization is specified.

TABLE 3-1. DEVICE DEFINITION OPTIONS (Cont'd)

Option	Description
NC=	Octal number of catalog tracks (power of two). This option is used only if the number of catalog tracks specified as system default for the device type is not satisfactory. The maximum value is 200 ₈ .
EQ=	EST ordinal of device to be initialized. For multispindle devices, this must be the first of NP consecutive removable units.
NP=	Number of physical units to be included in a multispindle device. The default value is 1. Each unit to be included in the multispindle chain must currently be defined as removable in the MST (E, M.) display (refer to section 4).
DN=	Two-octal digit logical device number (1 to 77) that will uniquely identify the device in its permanent file family. This option is not entered if TY=X.
TY=F	Initialized device may contain direct and indirect access permanent files. However, if DM=0, only direct access files may reside on the device. If SM=0 and DM=0, the device may only contain special system permanent files. Indirect access files can only reside on a master device (that is, DM≠0).
TY=X	Initialized device is an auxiliary device. This is a mass storage device that is not part of a permanent file family. An auxiliary device is a supplementary permanent file storage device that may be privately owned (UN option specified) or may be shared by many users (UN not specified). Auxiliary devices may contain direct or indirect access permanent files.

TABLE 3-2. TRACK FLAWING OPTIONS †

Option	Description
RTK	Converts input physical address to a logical address and sets track reservation table (TRT) to indicate that track is a reserved, flawed track.
TTK	Input is the same as RTK option but track reservation is toggled. That is, if the track was previously not reserved, this option produces the same results as the RTK option. If the track was previously reserved as a flawed track, that reservation is removed.
STK	Performs the same function as RTK except that input address is a logical address (no conversion required).

† Flawing of 881 disk packs is automatic; only flaws additional to current information should be entered.

CommandDescription

TRAINxx, y.

Assigns or changes print train identification y of line printer defined by EST ordinal xx. This command can set the identification if it was not specified in the EQ entry of the CMRDECK, or change an identification previously included in the CMRDECK. An LQ designation in the EQ entry indicates a 512 line printer; LR indicates a 580 line printer. LP is applicable to both.

Print trains supported for the 512 printer are 595-1 and 595-5. They are 596-1 and 596-5 for the 580 printer. The y field represents the following print train numbers.

<u>y</u>	<u>Print Train</u>
1	595-1 (for 512) or 596-1 (for 580)
2	Reserved for future use†
3	Reserved for future use†
4	Reserved for future use† †
5	595-5 (for 512) or 596-5 (for 580)
6	Reserved for future use†

Default value for y is 1.

BATCHIO BUFFER POINT COMMANDS

The following commands are valid only if the BATCHIO subsystem is currently assigned to a control point. The BATCHIO subsystem controls the local batch peripheral devices (card readers, card punches, and line printers). A BATCHIO buffer point is a buffer established for each of the local batch peripheral devices. The buffer points remain constant as long as the equipment status table (EST) is not changed. Current activity of each buffer point can be monitored on the BATCHIO (I) display. Refer to section 4 for information concerning the I display.

CommandDescription

BKSPxx.

Backspace one logical record on print file at buffer point xx.

BKSPxx, yy.

Backspace yy logical records on print file at buffer point xx.

BKSPFxx.

Backspace one file on print file at buffer point xx.

BKSPFxx, yy.

Backspace yy files on print file at buffer point xx.

BKSPRUxx, yy.

Backspace yy sectors on print file at buffer point xx.

CONTINUExx.

Resume printing at buffer point xx.

ENDxx.

Terminate current operation at BATCHIO buffer point xx. BATCHIO will then assign the next available file to that buffer point (if line printer or card punch buffer point) or accept a new job from that buffer point (if card reader buffer point).

ENDxx, yy.

Terminate current operation at BATCHIO buffer point xx. The yy parameter clears any portion of the repeat count specified for that buffer point (refer to REPEAT commands). For example, if the current operation at buffer point xx had been set to be repeated five times (operation performed six times), entering a value of

† These values are allowed but will default to 595-1 or 596-1 respectively.

†† This value is allowed but will default to 595-5 or 596-5 respectively.

<u>Command</u>	<u>Description</u>
	03 for yy would only permit the operation to be performed three times. If the repeat count is canceled, this command performs the same function as the preceding command.
REPEATxx.†	Repeat the current operation at BATCHIO buffer point xx one time.
REPEATxx,yy.†	Repeat the current operation at BATCHIO buffer point xx the number of times specified by yy. The maximum value that can be entered for yy is 77 octal.
RERUNxx.†	Terminate current operation at BATCHIO buffer point xx and reenter the job in the correct queue at a default queue priority.
RERUNxx,yyyy.†	Terminate current operation at BATCHIO buffer point xx and reenter the job in the correct queue with a queue priority specified by yyyy (MNPS ≤ yyyy ≤ MXPS).
SKIPxx.	Skip forward one logical record on print file at buffer point xx.
SKIPxx,yy.	Skip forward yy logical records on print file at buffer point xx.
SKIPFxx.	Skip forward one file on print file at buffer point xx.
SKIPFxx,yy.	Skip forward yy files on print file at buffer point xx.
SKIPRUxx,yy.	Skip forward yy sectors on print file at buffer point xx; yy is limited to 10B sectors (the current buffer size) + the number of sectors remaining in the buffer. If the buffer was empty, yy would be limited to 20B sectors. If yy is larger than the number of sectors remaining in the buffer, the buffer is filled again and the additional sectors skipped on the new print file. For example, if five sectors remained in the print file and yy was specified as 10, the remaining five sectors would be skipped, the buffer filled again, and five additional sectors skipped.
STOPxx.	Stop printing at buffer point xx.
SUPPRESSxx.	Suppresses automatic printer carriage control at BATCHIO buffer point xx (must be line printer buffer point). Examine the I display to determine the correct buffer point. This command stops the page eject function on the line printer to provide a continuous listing for the current job.

SUBSYSTEM CONTROL COMMANDS

The commands that follow provide control over which subsystems are to be used. When a system deadstart is performed, parameters specified in the IPRDECK determine which subsystem will initially be available. Scheduling other subsystems to a control point or terminating a current subsystem is dependent upon operator action.

When a subsystem is scheduled to a control point, any job currently assigned to that control point will be rolled out if its queue priority is MXPS or less. However, if the job has a

† When the current operation at a BATCHIO buffer point is repeated/rerun, maximum line and card limits are reinitialized prior to printing or punching of the file being processed. User control limits apply individually to each output file copy produced.

queue priority greater than MXPS, it cannot be rolled out and the command used to call the subsystem would not be valid. In this case, the operator could either terminate the job (if subsystem required that control point) or specify another control point. Under normal circumstances the job should not be terminated unless the operator has received specific instructions to do so.

Command

Description

n. EXPORTL.

Calls Export/Import subsystem to control point n. This should be the control point immediately preceding the system (last) control point. This command is not valid if a job currently assigned to control point n has a queue priority greater than MXPS. Activity at the EXPORTL control point can be monitored on the R display (refer to section 4).

The disposition of Export/Import punch files is controlled by setting sense switches as follows:

Entry

Response

n. ONSW1. Sends all punch files to local batch (on site) card punch.

n. ONSW2. Purge all punch files.

n - Control point number for EXPORTL

Sense switch 1 has precedence over sense switch 2. Export/Import punch files are ignored if neither is set.

n. IO.

Calls the BATCHIO subsystem to control point n. This should be the second from last control point. For example, if the system (last) control point is number 24, BATCHIO should be assigned to control point 22. This command is not valid if a job currently assigned to control point n has a queue priority greater than MXPS. BATCHIO must be active in order to use any of the local batch peripheral devices. Activity at the BATCHIO control point can be monitored on the I display (refer to section 4).

Response to line printer errors is controlled by setting sense switch 1 as follows:

Entry

Response

n. ONSW1. Lines causing print error messages are not flagged or retried.

n Control point number for BATCHIO.

n. MAGNET.

Calls the magnetic tape subsystem to control point n. This should be the third from last control point. For example, if the system (last) control point is number 24, MAGNET should be assigned to control point 21. This command is not valid if a job currently assigned

Command

Response

TELEX.

to control point n has a queue priority greater than MXPS. MAGNET (the magnetic tape executive) must be active in order for tape processing to take place. Unit numbers on tape units must not be changed after MAGNET is initialized. Tape usage can be monitored on the tape status and preview displays (refer to description of E display in section 4).

Calls the TELEX subsystem to control point 1. This command is not valid if a job currently assigned to control point 1 has a queue priority greater than MXPS. TELEX (the Time-Sharing Executive) must be active in order to enter jobs from a time-sharing terminal. Activity at the TELEX control point can be monitored on the T display (refer to section 4).

Several options are available to control the operation of TELEX. These options are selected by setting sense switches after TELEX is activated. Although normal operation does not require these sense switches to be set, sense switch 5 (1.ONSW5.) is set by default when TELEX is activated. Once set, the sense switches may be turned off again by entering 1.OFFSWx. (x is the sense switch number).

Entry

Response

- | | |
|-----------|---|
| 1. ONSW1. | When TELEX is terminated (by 1.STOP command), enter users into recover state and inhibit restarting operations. |
| 1. ONSW2. | Enable TELEX to use the delay queue feature. This allows response time to appear more consistent to users by delaying response in a lightly loaded system. Analysts can set this parameter by altering assembly constants within TELEX. |
| 1. ONSW3. | Abort TELEX on all abnormal conditions. This ensures that TELEX does not continue to operate if an internal malfunction occurs. This may be used with sense switch 5 to enable an analyst to determine the problem. Some conditions cause TELEX to abort even though sense switch 3 is not set. |
| 1. ONSW4. | Verify all user's working files upon recovery. Normally, only the user's rollout file (file containing all current system information) is verified when the user recovers. |

Command

Response

This option causes the system to check all working files for the proper length. This option should be used only when it is suspected that information on mass storage has been destroyed, and is activated automatically when TELEX aborts. If the operator thinks that mass storage is intact, this switch can be disabled (1. OFFSW4.).

1. ONSW5. Call DMP, which dumps information to the OUTPUT file after TELEX is dropped or aborted. This option provides a listing which may assist an analyst in determining the problem that existed when TELEX dropped or aborted. This sense switch is set by default when TELEX is activated.

1. ONSW6. Release OUTPUT file containing dump information written after TELEX is dropped or aborted (refer to 1. ONSW5. option) immediately after the dump is taken. When sense switch 6 is not set, the OUTPUT file is not released until TELEX is terminated. It is then printed with the TELEX dayfile.

This switch applies only when sense switch 5 is set.

TRANEX.

Calls the TRANEX subsystem to control point 2. This command is not valid if a job currently assigned to control point 2 has a queue priority greater than MXPS. For complete information concerning the TRANEX subsystem, refer to the TRANEX Operator's Guide Addendum.

n. STOP.

Drops (terminates) subsystem currently assigned to control point n. This command must also be entered in order to drop any job with a queue priority greater than MXPS.

Refer to the System Control Commands, ENABLE, DISABLE, AUTO, and MAINTENANCE, for additional information concerning subsystem control.

SYSTEM CONTROL COMMANDS

The following DSD commands control the operating system as well as the subsystems which run under the system. Several of these commands are typically used only by the site analyst for debugging purposes when the system is in an abnormal state. Others may be used frequently by the operator to maintain system integrity in a normal production environment. Appropriate cautions are included with individual command descriptions in cases where the command is not normally used by the operator or is not recommended for use in a production environment.

<u>Command</u>	<u>Description</u>
AUTO.	Calls specific subsystems to control points and initiates automatic job processing. The IPRDECK used at dead-start time determines which subsystems will be activated by default. However, any of those subsystems not currently assigned to a control point can be disabled or others enabled through use of the DISABLE and ENABLE commands. Individual subsystems can also be called to a control point or removed independent of the AUTO command by using the Subsystem Control Commands described earlier in this section. For additional information concerning the AUTO command, refer to Initiating Job Processing in section 2.
MAINTENANCE.	This command performs the same function as the AUTO command but additionally assigns several maintenance routines at pool processor control points and runs them with minimum queue and CPU priorities. Refer to Initiating Job Processing at the end of section 2 for complete information concerning this command.
ENABLE, x. or DISABLE, x.	Enables or disables one of the following options. If the ENABLE command is entered and the option specified by x is currently enabled, the command is ignored. Likewise, the DISABLE command is ignored if the option is already disabled.
x	= ACCOUNT Enable or disable processing of VAL=special entry point programs. Disabling ACCOUNT causes all VAL=entry point program request statements (such as USER and CHARGE) to be issued to the dayfile but not processed further. ACCOUNT is normally enabled when running in a production environment. Use of this feature is usually restricted to performance testing in order to reduce the overhead of processing USER/CHARGE statements. The console must be unlocked (refer to UNLOCK command) in order to enable or disable this option.

Command

Description

- = AUTOROLL
Enable or disable automatic rollout of jobs. This option improves time-sharing operation but could be disabled if running in a batch environment.
- = BATCHIO[†]
Enable or disable BATCHIO subsystem. If not running local batch, disabling BATCHIO frees a control point for other use.
- = EI200[†]
Enable or disable Export/Import (EXPORTL) subsystem. If not running remote batch, disabling EI200 frees a control point for other use.
- = MAGNET[†]
Enable or disable magnetic tape subsystem (MAGNET). If magnetic tape operations are not used, disabling MAGNET frees a control point for other use.
- = PRIORITY AGING
Enable or disable priority aging. Disabling this option causes larger jobs to be scheduled before smaller jobs of equal priority. There may be environments in which it is advantageous to run the larger jobs first (for example, a nontime-sharing environment).
- = REMOVABLE PACKS
Enable or disable automatic label checking for mass storage devices defined as removable. Examine the MST display (refer to section 4) to determine which mass storage devices (if any) are defined as removable. If this option is disabled, all removable devices subsequently introduced into the system cannot be accessed. This option must be enabled to perform label verification before those devices can be accessed.

[†] Option does not cause a subsystem to be assigned to a control point, or dropped. Instead, the option merely determines if the specified subsystem is to be assigned to a control point upon entry of the next AUTO or MAINTENANCE command. In addition, a currently active subsystem (assigned to a control point) will not be dropped by entering the DISABLE command followed by AUTO or MAINTENANCE. The n.STOP. command must be entered to drop an active subsystem.

<u>Command</u>	<u>Description</u>
= TELEX†	Enable or disable time-sharing subsystem (TELEX). If not running time-sharing, disabling TELEX frees a control point for other use.
= TRANEX†	Enable or disable transaction subsystem (TRANEX). If transaction subsystem is not being used, disabling TRANEX frees a control point for other use.
= VALIDATION	Enable or disable running of jobs without USER statements. Disabling VALIDATION allows jobs without USER statements to be run. If a USER statement is present, it will be processed depending on the x=ACCOUNT option discussed earlier. The system processes jobs with no VALIDUS file defined, but access to permanent files, tapes, and private packs is not allowed for any of the jobs. VALIDATION is normally enabled when running in a production environment. The console must be unlocked (refer to UNLOCK command) in order to enable or disable this option.
IDLE.	Idles all but the last control point (system is permanently assigned to the last control point). This command prevents any new jobs from being scheduled to a control point but does not terminate the job currently assigned. If a job is rolled out while this command is in effect, it will not be scheduled back to a control point until the AUTO or MAINTENANCE command is entered.

†Option does not cause a subsystem to be assigned to a control point, or dropped. Instead, the option merely determines if the specified subsystem is to be assigned to a control point upon entry of the next AUTO or MAINTENANCE command. In addition, a currently active subsystem (assigned to a control point) will not be dropped by entering the DISABLE command followed by AUTO or MAINTENANCE. The n.STOP. command must be entered to drop an active subsystem.

<u>Command</u>	<u>Description</u>														
CHECK POINT SYSTEM.	Rolls out all jobs having a queue priority less than or equal to MXPS and writes the contents of central memory tables to mass storage. This command is typically entered in preparation for a level 1 or 3 recovery deadstart. In this case, it is recommended that the IDLE command be entered before entering this command. This ensures that no new jobs will be scheduled to a control point after the checkpoint information has been written. If the IDLE command is not entered, job scheduling resumes automatically after the checkpoint information has been written. For additional information concerning the CHECK POINT SYSTEM command, refer to Preparing for Recovery Deadstart in section 2.														
n. DIS.	Calls the job display package (DIS) to an active control point specified by n. The A and B display for DIS automatically appear on the left and right console screen, respectively. Refer to section 8 for complete information concerning the DIS package.														
X. name. or X. name(ccc...ccc) or X. name, xxxxx.	Calls a system program or utility specified by name to an available control point. If parameters are to be passed to the program (for example, COMPASS or MODIFY), the second form of the command is used where (ccc...ccc) specifies the parameters. In both the first and second form of the command, a default field length of 60000 octal is assumed. If a field length different from the default is required, the third form of the command is used. The field length is specified by xxxxx.														
K. ccc...ccc. or L. ccc...ccc.	Allows entry of data ccc...ccc in user or system defined CPU buffer for control when K or L display is active. Refer to section 4 for information concerning the K and L display.														
UNLOCK.	<p>Unlocks the console keyboard. When this command is active, the message UNLOCKED appears in the header of the left screen display. Although all DSD commands can be entered when the console is unlocked, the following commands are restricted to entry only when the console is unlocked.</p> <table border="0" style="width: 100%;"> <tr> <td>• DEBUG.</td> <td>• All channel control commands</td> </tr> <tr> <td>• ENGR.</td> <td>• STEP.</td> </tr> <tr> <td>• DATE. yy/mm/dd.</td> <td>• STEP, xx.</td> </tr> <tr> <td>• TIME, hh, mm, ss.</td> <td>• n. STEP.</td> </tr> <tr> <td>• DISABLE, VALIDATION.</td> <td>• n. STEP, xx.</td> </tr> <tr> <td>• ENABLE, VALIDATION.</td> <td>• UNSTEP.</td> </tr> <tr> <td>• All memory entry commands</td> <td></td> </tr> </table> <p>The console should always be locked when the system is being used in a production environment. However, the console may be unlocked to allow entry of the STEP. command in the event that a system failure requiring a recovery deadstart occurs (refer to Preparing for Recovery Deadstart in section 2).</p>	• DEBUG.	• All channel control commands	• ENGR.	• STEP.	• DATE. yy/mm/dd.	• STEP, xx.	• TIME, hh, mm, ss.	• n. STEP.	• DISABLE, VALIDATION.	• n. STEP, xx.	• ENABLE, VALIDATION.	• UNSTEP.	• All memory entry commands	
• DEBUG.	• All channel control commands														
• ENGR.	• STEP.														
• DATE. yy/mm/dd.	• STEP, xx.														
• TIME, hh, mm, ss.	• n. STEP.														
• DISABLE, VALIDATION.	• n. STEP, xx.														
• ENABLE, VALIDATION.	• UNSTEP.														
• All memory entry commands															

<u>Command</u>	<u>Description</u>
LOCK.	Locks the console keyboard. This is a software function which prevents entry of restricted commands (refer to UNLOCK command for list of restricted commands). All other DSD commands can be entered when the console is locked. The console is normally locked when the system is being used in a production environment.
DATE. yy/mm/dd.	This command is used to change the current system date. The console must be unlocked before entry of this command is permitted (refer to UNLOCK command). yy year; 00 - 99 mm month; 01 - 12 dd day; 01 - nn (nn is the number of days in the month)
TIME. hh. mm. ss.	This command is used to change the current system time. The console must be unlocked before entry of this command is permitted (refer to UNLOCK command). hh hour; 00 - 23 mm minute; 00 - 59 ss second; 00 - 59
DEBUG.	Reverses the current set or clear condition of debug mode. When debug mode is set, the message DEBUG appears in the header of the left screen display. Debug mode provides system origin privileges to validated users and allows modifications to be made to the running system. The console must be unlocked before entry of this command is permitted (refer to UNLOCK command). In addition, use of debug mode is not commonly allowed in normal production environment.
ENGR.	Reverses current setting of engineering mode. When engineering mode is set, the message ENGR appears in the header of the left screen display. Engineering mode allows PPU/hardware diagnostics and FORMAT/FDP to be executed. The console must be unlocked before entry of this command is permitted (refer to UNLOCK command).
STEP.	This command sets monitor in step mode. When step mode is set, the message STEP appears in the header of the left screen display. Setting monitor in step mode stops all central memory I/O operations and prevents the system from processing PPU requests when the next monitor function is encountered. Pressing the space bar releases the present step and stops again for each subsequent monitor function. The console must be unlocked before entry of this command is permitted (refer to UNLOCK command). In addition, this command is generally used by the site analyst for debugging purposes and should not be used in a normal production environment. The operator should enter this command only when preparing for a level 3 recovery deadstart (refer to section 2).

<u>Command</u>	<u>Description</u>
STEP, xx.	Sets step mode for monitor function xx. When this mode is set, the message STEP followed by function number xx appears in the header of the left screen display. Setting step mode for monitor function xx stops all central memory I/O operations and prevents the system from processing PPU requests when monitor function xx is encountered. Pressing the space bar releases the present step and stops again at the next function xx. The console must be unlocked before entry of this command is permitted (refer to UNLOCK command). In addition, this command is generally used only by the site analyst for debugging purposes and should not be used in a normal production environment. The operator should not enter this command unless specifically directed to do so.
n. STEP. or n. STEP, xx.	Sets monitor in step mode for control point n. If xx is present, step mode is set for that monitor function. When this mode is set, the message STEP preceded by control point number n appears in the header of the left screen display. If xx was specified, it appears to the right of the STEP message. These commands perform the same function as that described for STEP. and STEP, xx. except only one control point is affected. The console must be unlocked before entry of these commands is permitted. In addition these commands are generally used only by the site analyst for debugging purposes. The operator should not enter these commands unless specifically directed to do so. Only one control point can be placed in step mode at a time.
UNSTEP.	Clears step mode. This command clears the effect of the STEP., STEP, xx., n. STEP., and n. STEP, xx. commands. The console must be unlocked before entry of this command is permitted (refer to UNLOCK command).
BLITZ.	Drops all but the last control point (system is permanently assigned to the last control point). The command n. DROP. performs the same function for a job at an individual control point (refer to Job Processing Commands). The Subsystem Control Command n. STOP. is used to drop a subsystem at an individual control point. To resume job processing after entering BLITZ it is necessary to enter the AUTO or MAINTENANCE command. The operator should not enter this command unless specifically directed to do so.

Command

Description

99.

This command disables or enables syntax overlay processing and logging of DSD commands in the system dayfile/error log. That is, depending upon current status, syntax overlay processing and logging are either turned off or turned on (normal condition). When disabled, DSD does not load overlays to check syntax. This should only be done when the system is in abnormal state to prevent PPU's from being requested when they cannot perform the necessary tasks (for example, when a system disk channel is hung). Disabling also terminates the logging of DSD commands. A 99. command which enables logging will be logged itself, but a 99. command which disables logging will not be logged.

This command is normally used only by the site analyst for debugging purposes. The operator should not enter this command unless he is given specific instructions concerning its use.

MEMORY ENTRY COMMANDS

The following commands are used to change the contents of central memory. Absolute locations or those relative to a control point may be changed. In addition, character values or numeric data can replace the current word contents. Either one 12-bit byte or 60 bits can be changed. A single byte can be changed by inserting the byte number after the location; bytes are numbered 0 through 4 from left to right. The address and contents are assembled right-justified with leading zero fill. Leading zeros may be omitted in the entry. Finally, the console keyboard must be unlocked to change memory under DSD (refer to UNLOCK command).



The operator should not enter any of the following memory entry commands unless explicitly directed to do so.

These commands are typically used only by the site analyst. Extreme caution must be observed when using these commands to avoid damage to the system or to user jobs. Again, the console must be unlocked in order to enter any of the memory entry commands. Formats and descriptions for these commands are as follows:

Command

Description

aaaaaa,yy...yy.
or
aaaaaa±yy...yy.

Changes the contents of absolute memory location aaaaaa to yy...yy (20 digits). The second form of the command performs essentially the same function but is used when it is necessary to change successive memory locations. †

† If the + sign is specified, the address is incremented by one location (aaaaaa+1) after the initial entry is processed; the - sign causes the address to be decremented by one location (aaaaaa-1). This allows immediate entry for the next (or previous) memory location. If the message REPEAT ENTRY is displayed above the entry, the yy...yy field is not cleared and can be entered in successive memory locations as many times as desired by pressing (CR). This repeat entry mode is enabled by pressing (CR) before initial entry of the command.

<u>Command</u>	<u>Description</u>
n. aaaaaa, yyy...yyy. or n. aaaaaa±yyy...yyy.	Changes the contents of memory location aaaaaa to yyy...yyy (20 digits). Location aaaaaa is relative to the reference address (RA) for the control point specified by n. The second form of the command performs essentially the same function but is used when it is necessary to change successive memory locations. †
aaaaaa, b, yyyy. or aaaaaa±b, yyyy.	Changes the contents of byte b at absolute memory location aaaaaa to yyyy. Note that each location consists of five 12-bit bytes, numbered 0 through 4 from left to right. The second form of the command performs essentially the same function but is used when it is necessary to change successive memory locations. †
n. aaaaaa, b, yyyy. or n. aaaaaa±b, yyyy.	Changes the contents of byte b at memory location aaaaaa to yyyy. Location aaaaaa is relative to the reference address (RA) for the control point specified by n. Note that each memory location consists of five 12-bit bytes, numbered 0 through 4 from left to right. The second form of the command performs essentially the same function but is used when it is necessary to change successive memory locations. †
aaaaaa, Dyyy...yyy. or aaaaaa±Dyyy...yyy.	Changes the contents of absolute memory location aaaaaa to display code characters yyy...yyy (left-justified and zero-filled). The second form of the command performs essentially the same function but is used when it is necessary to change successive memory locations. †
n. aaaaaa, Dyyy...yyy. or n. aaaaaa±Dyyy...yyy.	Changes the contents of memory location aaaaaa to display code characters yyy...yyy (left-justified and zero-filled). Location aaaaaa is relative to the reference address (RA) for the control point specified by n. The second form of the command performs essentially the same function but is used when it is necessary to change successive memory locations. †

CHANNEL CONTROL COMMANDS

The following commands provide the capability to control activity on a specified data channel in circumstances where abnormal hardware and/or system operation is detected. These commands are typically used only by the site analyst or customer engineer since they directly effect the operation of system peripheral equipment. Extreme caution must be exercised if any of these commands are entered during normal system operation. In addition, the console keyboard must be unlocked before entry of any of these commands is permitted (refer to description of UNLOCK command). DSD does not reserve the channel specified in any of the channel control commands. The channels are numbered 0 to 13 octal in a 10 PPU system and 0 to 13, 20 to 33 in a 20 PPU system.

† If the + sign is specified, the address is incremented by one location (aaaaaa+1) after the initial entry is processed; the - sign causes the address to be decremented by one location (aaaaaa-1). This allows immediate entry for the next (or previous) memory location. If the message REPEAT ENTRY is displayed above the entry, the yy...yy field is not cleared and can be entered in successive memory locations as many times as desired by pressing **CR**. This repeat entry mode is enabled by pressing **CR** before initial entry of the command.



The operator should not enter any of the following channel control commands unless explicitly directed to do so.

<u>Command</u>	<u>Description</u>
ACNcc.	Activate channel cc. This command alerts and prepares peripheral equipment on channel cc for the exchange of data.
DCNcc.	Deactivate channel cc. As a result, peripheral equipment on channel cc stops and any current I/O operation is terminated.
DCHcc.	Drop channel cc. This is a software function to release the current reservation of channel cc.
MCHcc.	Master clears and removes all 3000-series peripheral equipment selections on channel cc (6681 function code 1700 ₈ is issued).
IANcc.	Input to pseudo A register from channel cc.
LDC, nnnn.	Load pseudo A register with nnnn (normally a peripheral equipment function code). The current value of nnnn is the rightmost field in the header of the right screen display (adjacent to channel status).
OANcc.	Output contents of pseudo A register to channel cc.
FNCcc, xxxx.	Output function code xxxx to channel cc.
FCNcc.	Output a zero function code (no activity) to channel cc. This releases all equipment selections on that channel.

The operator and the system communicate through the console keyboard and one or more console display screens. The system provides information about job and system status through displays on the console screen(s). Data entered from the keyboard is also displayed. A permanent record, or system dayfile, of all system/console communication is retained by the system and may be printed at operator request.

The two major display programs are system display, controlled by the DSD program, and control point job display, controlled by the DIS program (refer to section 8). The display console is controlled by DSD, which permanently resides in peripheral processor 1. The primary functions of DSD are to maintain a current display of system status and to process keyboard entries from the operator. At the console keyboard, the operator may assign equipment, exercise control over job scheduling and execution, initiate utility programs, and select displays. The CDC CYBER 170 Series console keyboard contains a PRESENTATION CONTROL switch which allows the operator to display a left screen display only, a right screen display only, or both the left and right screen displays on a split screen. Refer to section 3 for a description of the PRESENTATION CONTROL switch.

DISPLAY SELECTION

Any of the DSD displays can be selected by the console command† :

xy. (CR)

where x and y represent the letter designation of the displays; x appears on the left screen and y appears on the right. If x and y are identical, both screens display the same information. The displays available to the operator are:

<u>Letter Designation</u>	<u>Display</u>	<u>Description</u>
A	Dayfile†	Chronological history of system operations
B	Job status	Current status of all jobs assigned to control points
C,D	Central memory	Contents of 32 central memory words (four selectable 8-word groups) in five columns of four octal digits with display code equivalents
E	Equipment status	Status of peripheral devices
F,G	Central memory	Contents of 32 central memory words (four selectable 8-word groups) in four columns of five octal digits with display code equivalents
H	File Name Table (FNT)	List of FNT entries for all active files in the system
I	BATCHIO status	Status of central site unit record devices

† This display is control-point oriented. Paging forward and backward through the display for each control point is achieved with the + and - keys, respectively. The number of the control point also appears at the top next to the letter designator (for example, A5).

<u>Letter Designation</u>	<u>Display</u>	<u>Description</u>
J	Control point status†	Status of the specified control point
K, L	CPU programmable†	Dynamic operator/CPU communication
N	File display	Contents of any file assigned to an FNT ordinal. Display is initially selected with the DISPLAY,xxx. command (refer to description of File (N) Display later in this section).
O	Transaction status	Status of TRANEX (Transaction Subsystem). Refer to the TRANEX Operator's Guide Addendum for complete information.
P	PP communications area	Current contents of PP registers
Q	Queue status	Status of active input, output, and rollout queues
R	Export/Import status	Status of remote batch operations
S	System control information	Parameters used to control job flow
T	Time-sharing status	Status of time-sharing users
Y	Monitor functions	List of all monitor mnemonics and codes
Z	Directory	List of the letter designators and descriptions of all DSD displays

The following DSD command allows the operator to preselect the left screen display sequence.

SET, ssss. (CR)
 ssss Letter designating any four of the DSD displays listed. Note that four display identifiers must be specified.

Pressing the right blank key after this command is entered causes the first display specified to appear on the left console screen. Pressing the key again selects the second display. The next display in the specified sequence appears on the left console screen each time the right blank key is pressed.

DISPLAY SCREEN HEADERS

Standard system headers appear on each of the display screens. The left screen header provides the following information.

- Time and date (specified by the DSD TIME and DATE commands)
- Comment lines (specified by the NAME entry in CMRDECK)
- Job count represented by a four-character sequence number ranging from AAAA to 9999. A job count of AAAD indicates that three jobs have entered the system since deadstart.

† This display is control-point oriented. Paging forward and backward through the display for each control point is achieved with the + and - keys, respectively. The number of the control point also appears at the top next to the letter designator (for example, A5).

- Console status (either UNLOCKED or blank). Refer to section 3 for a description of the LOCK and UNLOCK commands.
- System modification status (either DEBUG or blank). Refer to section 3 for a description of the DEBUG command.
- Monitor step mode (either STEP or blank). Refer to section 3 for a description of the STEP., STEP,xx., n.STEP., n.STEP,xx., and UNSTEP commands.
- Engineering mode (either ENGR or blank). Refer to section 3 for a description of the ENGR command.

The right screen header provides the following information.

- Contents of the P register
- Control point to which the CPU is assigned
- Status of the channels
- Amount of unassigned central memory

In addition, at the bottom of the right screen, each peripheral processor is represented by an entry for the program currently running and the control point to which the program is assigned. PP0 and PP1 are dedicated to monitor (MTR) and DSD, respectively.

Any display can appear on the left or the right screen, and therefore, can have a left screen or a right screen header. Figures 4-1a and 4-2 illustrate the left and right screen headers, respectively. All other displays illustrated in this section are shown without a header.

DAYFILE (A) DISPLAYS

Dayfile messages are saved in four different types of dayfiles. A system history is kept on the system dayfile. An accounting record is kept on the account dayfile for possible further processing (for example, customer billing). System error messages such as disk errors are recorded on the error log dayfile. Control point dayfiles record the operations of each job.

The dayfiles are brought to the screen by typing:

<u>DSD Command</u>	<u>Dayfile</u>
A,.	System
A,ACCOUNT FILE.	Account
A,ERROR LOG.	Error log

A control-point dayfile is displayed by entering the DIS command (refer to section 8):

A.

or by entering either of the following DSD commands:

A,n. (n specifies the control point number)

or

A,. (paging to the desired dayfile is accomplished via the + or - key)

Dayfile messages are added to one of the dayfiles when:

- A control statement is processed or a system action occurs which is not in direct response to a control statement (such as an error message).
- An error is detected.
- A comment is entered either via a COMMENT control statement or MESSAGE macro.
- The operator enters a message.

When a job terminates, messages are sent to the account dayfile recording the resources charged to the job. In addition, control-point dayfile entries are printed at the end of a job's output. The system dayfile, which includes entries for all jobs processed, is available as a record of all action taken since deadstart. Although the A display shows only the entries currently in the dayfile buffer, the operator can obtain the entire contents by dumping the file to a printer, punch, or tape unit.

Messages on the A display appear in the following formats.

System dayfile messages:

time.jobname.message.

Account dayfile messages:

time.jobname.activity, additional information.

Error log dayfile messages:

time.jobname.message.

The time is the time of day as entered into the system at deadstart or by a TIME command to DSD. For example, if the system is deadstarted at 8:00 a.m. and the time is entered at deadstart, the time in 10 minutes is 08.10.00. If the time was not entered at deadstart, the time in 10 minutes is 00.10.00. The time is followed by the name of the job associated with the message and the message itself. As a job is processed, messages are sent to the dayfile by PP programs or central memory programs.

The job name is a combination of several parameters which describe the job. The first seven characters are the system-assigned job name and the eighth character indicates the origin of the job. The job name is constructed as follows:

System Origin Jobs

The first field consists of the first four characters of the utility function specified. If fewer than four characters are entered, the field is zero-filled. The next field consists of the three rightmost characters of the job sequence number, which ranges from AAA to 999. For example, if the operator enters X.PFS, the job name may be PFS0AACS. If X.STAGE is entered, the job name may be STAGAADS. The eighth character for system origin jobs is S.

Batch Origin Jobs

The first four characters are derived from the user index associated with the user number supplied on the USER statement. The next three characters are the rightmost characters of the job sequence number. The eighth character for batch origin jobs is B.

Remote Batch and Terminal Origin Jobs

The first four characters are derived from the user index associated with the user number supplied by the user when he logs into the system. The next three characters represent the number of the terminal on which the user is logged in for time-sharing jobs and the job sequence number for remote batch jobs. The eighth character is T for time-sharing jobs and E for remote batch jobs.

The activity given in account dayfile messages is a unique four-character identifier which defines a particular activity. The first character identifies the information group; the second character, the event which caused the message to be entered into the account file; and the third and fourth characters, the activity being recorded. The purpose of this field and the additional information which follows it is to record system usage and provide a means of accurately billing users. Complete descriptions of account file activity messages can be found in part IV of the Installation Handbook.

Each control statement executed, including the job statement, is printed at the end of the output from the job. The dayfile may be observed as follows:

- On the console screen (A display), the file is moved up the display screen as messages are generated.
- At the end of a job's printed output, all dayfile messages associated with that job are printed. However, time-sharing origin (TXOT) jobs must request the dayfile listing via terminal command.

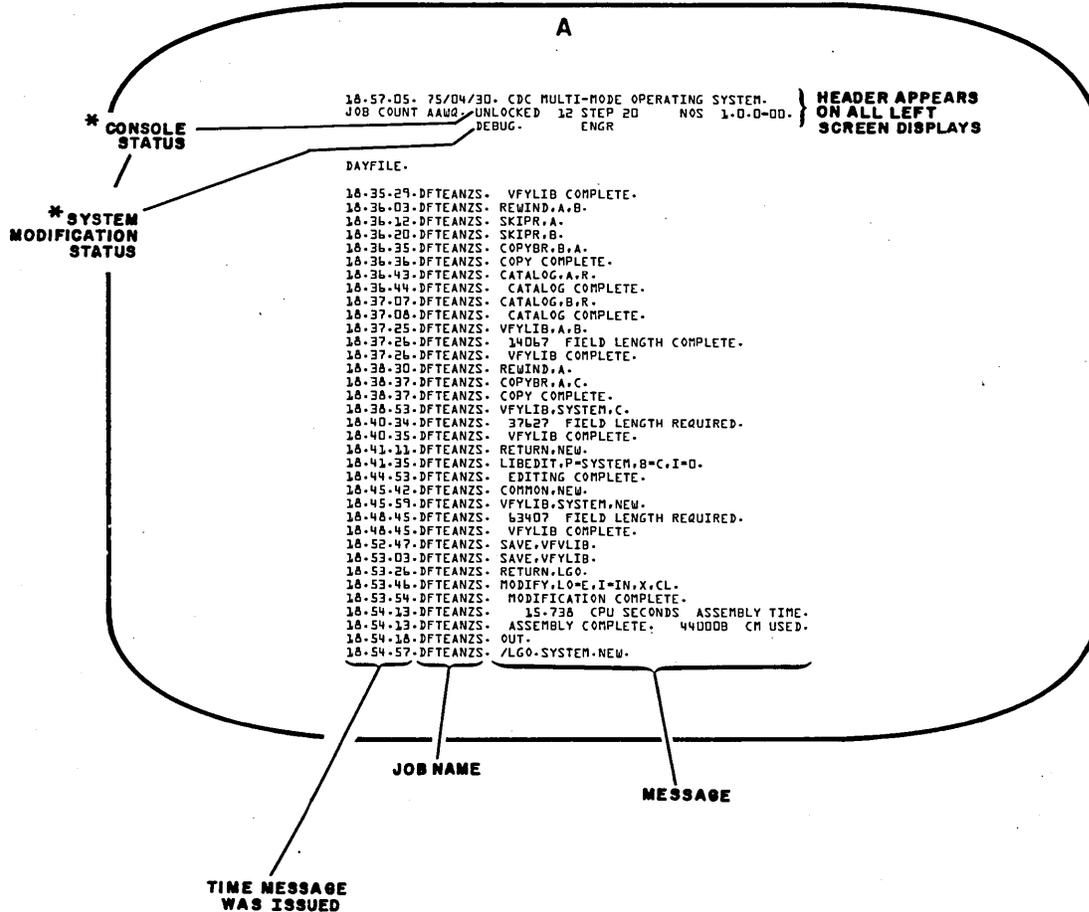
If the A display is on the left screen, the operator can alternate between the system dayfile and a control-point dayfile using + and - keys. The + and - keys page the A display through each control-point dayfile forward and backward, respectively. After the last control point, the display returns to the system dayfile. The right screen is paged with the left and the right parenthesis keys.

The operator can dump a dayfile to a specified equipment by typing:

<u>DSD Command</u>	<u>Dayfile</u>
DAYFILE, xx.	System
ACCOUNT, xx.	Account
ERRLOG, xx.	Error Log

where xx is the equipment status table (EST) ordinal of the equipment to which the dayfile is to be dumped; refer to description of EST (E, A, or E, .) display. Check to ensure that the equipment specified (for example, line printer) is ready and immediately available for the dayfile dump.

Figure 4-1a illustrates the system dayfile display, Figure 4-1b illustrates the account dayfile display, and Figure 4-1c illustrates the error log dayfile display.



*** BRIGHTER INTENSITY**

Figure 4-1a. System Dayfile (A) Display

A

18-57-05- 75/04/30. CDC MULTI-MODE OPERATING SYSTEM.
JOB COUNT AA00. UNLOCKED 12 STEP 20 NOS 1-0-0-00.
DEBUG. ENGR.

ACCOUNT FILE.

16.43.46.DFTEANZS.	SPCT.	CATALOG.	
16.43.47.DFTEANZS.	SPDF.	ERA0414.	
16.43.48.DFTEANZS.	APPN.		
16.43.51.DFTEANZS.	APPN.		
16.43.51.DFTEANZS.	SPCT.	CATALOG.	
16.43.51.DFTEANZS.	APPN.		
16.43.52.DFTEANZS.	SPCT.	CATALOG.	
16.43.52.DFTEANZS.	SPCT.	CATALOG.	
16.43.52.DFTEANZS.	APPN.	PACKEI.	
16.43.52.DFTEANZS.	SPCT.	CATALOG.	PACKEI.
16.43.53.DFTEANZS.	APPN.		
16.43.59.AACIO46T.	UECO.		0.652KCHS.
16.43.59.AACIO46T.	UECI.		0.200KCHS.
16.43.59.AACIO46T.	UEPF.		0.160KUNS.
16.43.59.AACIO46T.	UEMS.		6.120KUNS.
16.43.59.AACIO46T.	UECP.		15.100SECS.
16.43.59.AACIO46T.	AESR.		16.715UNTS.
16.44.15.DFTEANZS.	UEPF.		0.004KUNS.
16.44.15.DFTEANZS.	UEMS.		0.104KUNS.
16.44.15.DFTEANZS.	UECP.		0.420SECS.
16.44.15.DFTEANZS.	AESR.		1.000UNTS.
16.44.20.AAA0053T.	SPCT.	INPUT.	
16.44.36.QFSPANRS.	UCLP.	23.	0.102 KLNS.
16.44.39.QFSPANYS.	UCLP.	22.	0.256 KLNS.
16.44.42.DFTEANZS.	UCLP.	23.	0.256 KLNS.
16.45.27.AAA0053T.	SPOT.	COMSSCP.	
16.45.42.AACIO46B.	UCLP.	23.	1.472 KLNS.
16.45.44.AACIO46B.	UCLP.	22.	1.472 KLNS.
16.46.37.AAA0053T.	UCCO.		4.076KCHS.
16.46.44.AAA0053T.	UECO.		0.079KCHS.
16.46.44.AAA0053T.	UECI.		0.139KCHS.
16.46.44.AAA0053T.	UEPF.		0.925KUNS.
16.46.44.AAA0053T.	UEMS.		0.149KUNS.
16.46.44.AAA0053T.	UECP.		0.067SECS.
16.46.44.AAA0053T.	AESR.		1.000UNTS.

Figure 4-1b. Account Dayfile (A) Display

A

18.57.05. 75/04/30. CDC MULTI-MODE OPERATING SYSTEM.
JOB COUNT AAWQ. UNLOCKED 12 STEP 20 NOS 1.0.0-00.
DEBUG. ENGR.

ERROR LOG.

```
MT.C12-5-01.MMM51.RD. .SD.3207. 0000.  
16.19.19.DFTEANZS. MT.C12.F06.E00.8001033. PARITY  
16.19.20.DFTEANZS. MT.C12-5-01.MMM51.RD. .SD.3207. 0000  
16.19.20.DFTEANZS. MT.C12.F06.E00.8001034. PARITY  
16.19.20.DFTEANZS. MT.C12-5-01.MMM51.RD. .SD.3207. 0000  
16.19.20.DFTEANZS. MT.C12.F06.E00.8001035. PARITY.  
16.19.20.DFTEANZS. MT.C12-5-01.MMM51.RD. .SD.3207. 0000  
16.19.20.DFTEANZS. MT.C12.F06.E00.8001036. PARITY.  
16.19.21.DFTEANZS. MT.C12-5-01.MMM51.RD. .SD.3207. 0000  
16.19.21.DFTEANZS. MT.C12.F06.E00.8001037. PARITY.
```

Figure 4-1c. Error Log Dayfile (A) Display

JOB STATUS (B) DISPLAY

DSD displays the status of control points. The number of control points is specified at deadstart time (23 maximum). One control point is added to the number specified and is dedicated to system use. A control point entry appears in the following format.

n	job	jobname	pr	qpr	fl	s	mes
n							Control point number. A job is assigned to a control point when it is residing in central memory.
job							FNT ordinal of the job. All jobs are assigned an entry in the FNT (refer to the H display).
jobname							Name assigned by the system to uniquely identify the job. The job name consists of a 7-character identifier with an eighth character appended to signify the job origin type. The five job origin types are: S System job T Time-sharing job B Local batch job E Remote batch job (Export/Import) M Multiterminal job
pr							CPU priority (the job priority for the CPU)
qpr							Queue priority (the queue priority is used to control the scheduling of the jobs from the queues)
fl							Field length/100 of job being processed
s							CPU status: A Control point using CPUA B Control point using CPUB (dual CPU systems only) W Control point waiting for CPU X Control point is in recall I Control point is in auto recall (waiting for completion of system request: I/O tape, assign, etc.) blank CPU not needed at this control point
mes							First 30 characters of the message area for the control point. Messages requiring operator intervention, control statements being processed, and error messages are displayed here. If a message requires operator action, it may be periodically intensified by the system.

Figure 4-2 illustrates the job status (B) display.

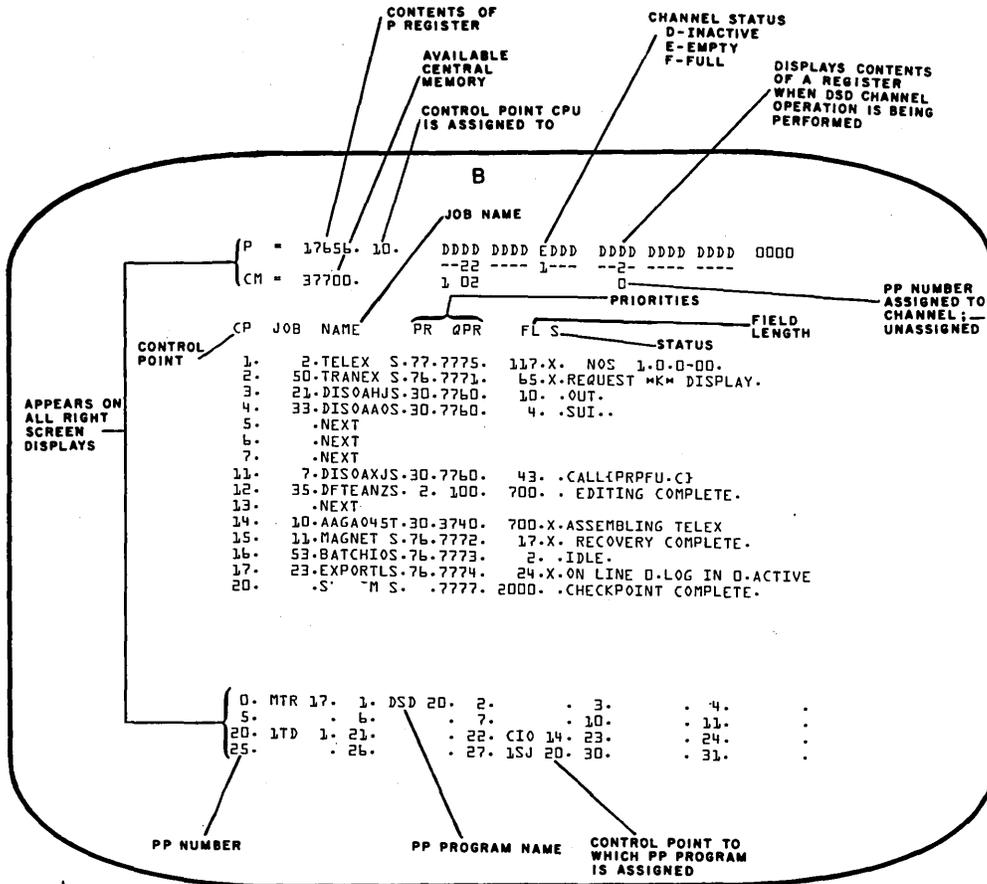


Figure 4-2. Job Status (B) Display

STORAGE (C,D,F,G) DISPLAYS

These displays are used primarily to observe central memory. Each storage display consists of four groups of eight central memory words, with the groups numbered 0 through 3 from top to bottom. The format of each line of the display is:

address octal word display code equivalent

The octal words in the C and D displays are shown in five columns of four octal digits; words in the F and G displays have four columns of five digits. The character equivalent to the display-coded octal digits appear to the right of the octal word. Blanks appear for any character with an octal display code above 57, as well as for display codes 00, 53, and 55.

The C, D, F, and G displays can be brought to the screens with any of the following commands.

Command

Resultant Display

xy. Brings the x and y displays to the left and right console screens, respectively (x and y are C, D, F, or G). Unless a control point memory display has previously been selected (refer to following command), all words displayed represent absolute memory locations.

x, n. Brings a specified control point memory display to the left console screen as follows:

x Display identifier (C, D, F, or G)
n Control point number

All words displayed are relative to the reference address (RA) for the control point specified by n. When addresses relative to a control point are displayed, the control point number appears next to the display identifier at the top of the screen (for example, D15.). However, after a control point memory display has initially been selected, either absolute addresses or those relative to the control point may be displayed. Pressing the = key alternates the display between its relative and absolute settings. When absolute memory locations are displayed, the display identifier appears alone at the top of the screen (the control point number is erased).

xz, aaaaaa.

Brings a specified memory display to the left console screen, if not currently selected, and provides display modification as follows:

x Display identifier (C, D, F, or G)
z Type of display modification:
 z=0-3 Changes the specified word group (0 through 3) to display the eight words beginning at memory location aaaaaa.
 z=4 Changes the display so that all four 8-word groups are displayed as 32 contiguous memory locations beginning at location aaaaaa.
 z=5 Advances the display by aaaaaa locations.
 z=6 Decrements the display by aaaaaa locations.

aaaaaa Location parameter

If a control point number appears with the display identifier at the top of the screen, the memory locations shown in the

display are relative to that control point. If no control point number is indicated, all memory locations shown are absolute.

When a memory display is on the left screen, the address can be stepped forward or backward 40 octal locations by pressing the + or - key; the right screen is paged with the left and right parenthesis keys. Memory displays can also be set to advance or decrement by a specified constant by using the x5, aaaaaa. and x6, aaaaaa. entries.

For example:

Ⓞ Causes the REPEAT ENTRY message to appear (refer to section 3).

C5, 101. Ⓞ Increments present C display by 101. Each successive carriage return increments the displays by 101.

x6, aaaaaa. is used in the same manner to decrement by the value specified.

The selection of a control point memory display and/or the selection of addresses for any word group on a memory display remain in force even though the display is not on either screen. For instance, if the standard format of xy. is used to recall the C display to the screen, the control point and/or the addresses shown are those specified by the last call in the format C, n. and/or Cz, aaaaaa. For example, if the A and B displays are on the left and right screens and the operator types in the following sequence, the displays change as follows:

- C, 5. The A display on the left screen is replaced by the C display showing the words at locations 0 through 37 relative to control point 5.
- C3, 1234. The fourth group of words on the display changes from words at locations 30 through 37 to those at locations 1234 through 1243.
- AB. The B display remains on the right screen; the C display is replaced by the A display on the left screen.
- CB. The C display for control point 5 is brought back to the left screen still showing the words at locations 0 through 7 (group 0), 10 through 17 (group 1), 20 through 27 (group 2), and 1234 through 1243 (group 3).

Figure 4-3 illustrates the C and D central memory displays. Figure 4-4 illustrates the F and G central memory displays.

C

ADDRESS	MEMORY CONTENTS					DISPLAY CODE EQUIVALENT
000000	0000	0000	0000	0000	0000	
000001	0002	2156	0012	0004	4000	BQ, J DS
000002	0003	L112	0000	0027	L200	C J U
000003	L320	0001	7417	0000	0003	P A O C
000004	L600	7600	0000	0001	3340	AD5
000005	L500	L600	L504	0000	0000	D
000006	0003	L111	0003	7302	0000	C I C B
000007	0003	L265	0003	7323	0000	C C S
000010	0000	0000	0000	0000	0000	
000011	0000	0000	0000	0000	0000	
000012	0000	0000	0000	0000	0000	
000013	0000	0000	0000	0000	0000	
000014	0000	0000	0000	0000	0000	
000015	0000	0000	0000	0000	0000	
000016	0000	0000	0000	0000	0000	
000017	0000	0000	0000	0000	0000	
000020	0000	0000	0000	0000	0377	SYSTEM C
000021	2331	2324	0515	5555	0000	AABW
000022	0000	0000	0001	0102	2700	P
000023	0000	0000	0000	0000	2067	HH H H
000024	0000	0010	1000	0010	0010	73121
000025	0000	0000	0000	0000	0000	CEAPY*
000026	0000	0000	0042	3634	3534	
000027	0000	0000	0305	0120	3147	
000030	5534	4157	3540	5736	4457	16-25-39-
000031	5542	4050	3336	5036	3457	75/03/31-
000032	5503	0403	5515	2514	2411	CDC MULTI
000033	4615	1704	0555	1720	0522	-MODE OPER
000034	0124	1116	0755	2331	2324	ATING SYST
000035	0515	5700	0000	0000	0000	EM.
000036	0000	0000	0000	0000	0000	
000037	0000	0000	0000	0000	0000	

FIVE COLUMNS OF FOUR CHARACTERS

Figure 4-3. Central Memory (C) Display

F

ADDRESS	MEMORY CONTENTS				DISPLAY CODE EQUIVALENT
000000	00000	00000	00000	00000	
000001	00022	15600	12000	44000	BQ, J DS
000002	00036	11200	00002	76200	C J W
000003	63200	00174	17000	00003	P A O C
000004	66007	60000	00000	13340	ADS
000005	65006	60065	04000	00000	D
000006	00036	11100	03730	20000	C I C B
000007	00036	26500	03732	30000	C C S
000010	00000	00000	00000	00000	
000011	00000	00000	00000	00000	
000012	00000	00000	00000	00000	
000013	00000	00000	00000	00000	
000014	00000	00000	00000	00000	
000015	00000	00000	00000	00000	
000016	00000	00000	00000	00000	
000017	00000	00000	00000	00000	
000020	00000	00000	00000	00377	C
000021	23312	32405	15555	50000	SYSTEM
000022	00000	00000	01010	23100	AABY
000023	00000	00000	00000	02530	UX
000024	00000	01010	00001	00010	HH H H
000025	00000	00000	00000	00000	
000026	00000	00000	42363	43534	73121
000027	00000	00003	05012	03252	CEAPZ}
000030	55344	15735	41573	73557	16-26-42-
000031	55424	05033	36503	63457	75/03/31-
000032	55030	40355	15251	42411	CDC MULTI
000033	46151	70405	55172	00522	-MODE OPER
000034	01241	11607	55233	12324	ATING SYST
000035	05155	70000	00000	00000	EM.
000036	00000	00000	00000	00000	
000037	00000	00000	00000	00000	

FOUR COLUMNS OF FIVE CHARACTERS

Figure 4-4. Central Memory (F) Display

EQUIPMENT STATUS (E) DISPLAYS

The E display lists the status of peripheral equipment. The type of information supplied varies according to the subdisplay specified.

Command	Display
E, . or E, A.	Equipment status table (EST)
E, M.	Mass storage tables (MST)
E, P.	Resource mounting preview
E, T.	Tape status

EST (E, or E,A.) DISPLAY

The EST display lists the status of all devices in the equipment status table. Each entry appears in the following format.

no	type	stat	eq	un	channels
no		EST ordinal			
type		Device type			
stat		Equipment status (ON or OFF)			
eq		Equipment number			
un		Unit number (serves as ID code for unit record devices)			
channels		Channel(s) on which equipment is available			

A control point number precedes the equipment number in each entry if that piece of equipment is assigned to a control point. Following the channel number entry is an entry that specifies the remaining tracks for mass storage devices or an alternate channel for magnetic tape units. The identifier code (un parameter) provides a method of grouping peripheral devices when a site has several units. Output from a job read in through a card reader with identifier xx can only be directed to a device with the same identifier. Changing the identifier code via the SETID control card or an LP DSD command can direct program output to a special printer (for example, for form control or multiple copy forms). The following device types can appear in the second column of the equipment status display.

CP	415 Card Punch
CR	405 Card Reader
DE	Extended Core Storage
DI	844 Disk Storage Subsystem
DP	Distributive Data Path to ECS
DS	Console Display
LP	512 or 580 Line Printer
LQ	512 Line Printer
LR	580 Line Printer
MD	841 Multiple Disk Drive
MT	Magnetic Tape Drive (7-track)
NE	Null equipment
NT	Magnetic Tape Drive (9-track)
SA	6673 or 6674 Multiplexer
ST	Remote Batch Multiplexer (6671)
TE	Null equipment
TT	Time-sharing Multiplexer (6676 or 6671)

Figure 4-5a illustrates the EST display.

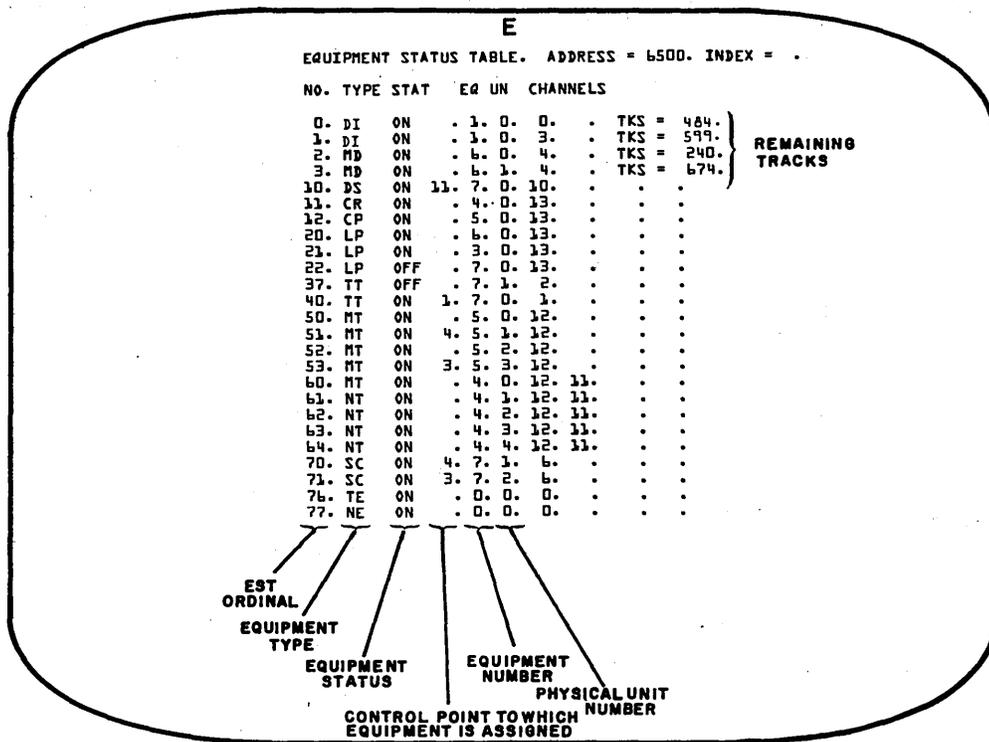


Figure 4-5a. Equipment Status (E,. or E,A.) Display

MASS STORAGE TABLES (E,M.) DISPLAY

The MST display provides detailed status information about all mass storage devices. Each entry in the display appears in the following format.

eq	type	u	iam	dam	dn	status	fy/pk	p	mup	count
eq	EST ordinal									
type	Device type:									
	DE	Extended Core Storage								
	DI	844 Disk Storage Subsystem								
	DP	Distributive Data Path to ECS								
	MD	841 Multiple Disk Drive								
u	First physical unit number of this equipment									
iam	Indirect access file user mask									
dam	Direct access file user mask									
dn	Device number (uniquely identifies a device within a family of permanent file devices)									
status	Status conditions; any combination of conditions can exist; the following codes are listed in the order in which they appear on the display.									
	F	844 reformatting operation requested.								
	S	System resides on this device.								
	R	Device is removable.								
	X	Device is an auxiliary permanent file device.								
	C	Checkpoint requested for specified device. The operator should ensure that C status is not present before dismounting a removable device, issuing an OFF command to logically remove a device, or attempting a deadstart operation.								
	U	Device is unavailable.								
	O	Catalog track overflowed.								
	I	Initialization requested.								
	L	This device is locally in unload status, and therefore, not available for permanent file access (for example, the operator is changing packs on a physically removable permanent file device).								
	N	Reserved.								
	T	System allocation of temporary files is allowed on this device.								
	A	Alternate system device.								

fy/pk	If the device is a member of a family of permanent file devices, its family name is displayed. If the device is an auxiliary permanent file device, its pack name is displayed.
p	* is displayed if the device is a private auxiliary device.
mup	Multiunit position in the form m/n, where m is the unit's position amount n total units. However, if the device is defined in CMRDECK as a multiunit device, only the first of n units will be displayed.
count	Number of direct access files attached

In addition, if an error is detected, the system displays (and periodically intensifies) an error code following the count field.

LE	Label error (unrecognizable label)
CE	Configuration error (active device has one of the units in error)
IL	Incorrect label (the label on an active device is incorrect)
NR	Not ready
LK	Error in TRT linkage detected when recovering PFS; no recovery possible; can occur only when introducing removable devices after deadstart.
TL	Length of device's TRT is in error; no recovery possible
DN	Device number conflicts with that of another device in the family
PN	Duplicate pack name exists
UM	User mask for family does not uniquely equal 377 ₈
OF	Device has OFF status
IN	Device has initialize status set (only if set via deadstart)

Figure 4-5b illustrates the mass storage tables display.

E

```
MASS STORAGE TABLES.  
PFNL 0000 0000 0000 0002 0101      BAA  
EQ  TYPE UN  IAM  DAM  DN  STATUS      FY/PK  P MUP COUNT  
  
0. DI  0  377.  377.  01.  -S-----T-  SYSTEM  1/1.  .  
1. DI  0  .  .  .  02.  -S-----T-  SYSTEM  1/1.  .  
2. MD-2 0  377.  377.  40.  -----T-  SYS172  1/2.  7.  
3. MD  2  .  .  .  00.  --R--U--L---  .  .  NR  
5. DI  12 377.  377.  00.  ---X-----T-  PACKEI  1/1.  31.  
6. DI  22  .  .  .  00.  --R--U--L---  .  .  NR  
7. DI  23  .  .  .  00.  --R--U--L---  .  .  NR
```

Figure 4-5b. Mass Storage Tables (E,M.) Display

RESOURCE MOUNTING PREVIEW (E,P.) DISPLAY

The preview display identifies the tapes and packs needed to satisfy user's requests. Each line in the display appears in the following format.

```
no  eq  pn/vsn  usernum  ring  
no          FNT ordinal of job  
eq          Resource type:  
           MT      Magnetic Tape Unit (7-track)  
           NT      Magnetic Tape Unit (9-track)  
           DIi     844 Disk Storage Subsystem (1 ≤ i ≤ 8)  
           MDi     841 Multiple Disk Drive (1 ≤ i ≤ 8)
```

pn/vsn 1- to 6-character volume serial number of the required tape or 1- to 7-character pack name of the required pack. The pn/vsn is obtained from the user's control card.

usernum User number of job

ring Magnetic tape ring enforcement (if any):

 IN Write enable required (ring in)

 OUT Write disable required (ring out)

 blank No ring enforcement

Figure 4-5c illustrates the preview display.

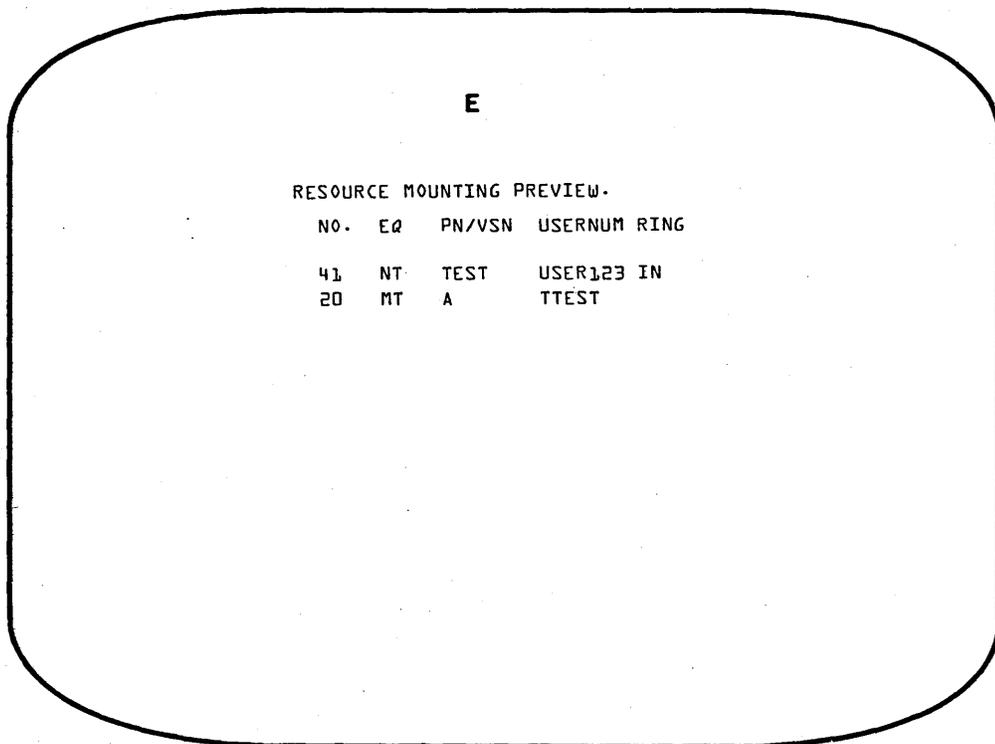


Figure 4-5c. Resource Mounting Preview (E, P.) Display

TAPE STATUS (E,T.) DISPLAY

The tape status display provides a summary of the status of all magnetic tape units in the system. Each entry appears in the following format.

eq	vsn	den	r	f	cp	jobname	status
	fileid				rn		
eq							Identifies the equipment being used: MTuu 7-track; uu is the unit number NTuu 9-track; uu is the unit number
vsn							Volume serial number of the mounted tape
den							Density (bpi/cpi): 200 200 bpi (implies 7-track) 556 556 bpi (implies 7-track) 800 800 bpi/cpi (7- or 9-track) 1600 1600 cpi (implies 9-track)
r							Ring status (IN if the write enable ring is in; blank if the ring is out)
f							Data format: I Internal SI SCOPE Internal X External S Stranger L Long Record E Line Image B Blocked F Foreign
cp							Control point to which the specified job is assigned
jobname							Name of the job to which the tape unit is assigned
status							Status of the tape unit: READY Unit is ready IDLE Unit is idle LOADPT Tape is positioned at load point ROLLED Job using tape unit has been rolled out DOWN Unit has been logically removed from the operating environment via the OFF command. DOWN status is not set until a subsequent operation is attempted on that unit. NOTRDY Unit is not ready MOUNT Indicates that next reel should be mounted. Reel to be mounted may be identified by VSN, or if tape is unlabeled, by reel number.
fileid							File identifier obtained from tape label. No column heading is displayed for this field; it is the first field in the second line of the entry and appears under the vsn field.
rn							Reel number currently in use or reel to be mounted if MOUNT status is set. No column heading is displayed for this field although the characters RN identify its position in the second line of the entry.

Figure 4-5d illustrates the tape status display.

E

EQ	VSN	DEN	R	F	CP	JOB	STATUS
MT50	*****50	800					IDLE
	UNLABELED				RN	1.	
MT51	*****51	800	IN	I	4.	DFTEANZS	LOADPT
	UNLABELED				RN	1.	
MT52		800					IDLE
MT53	*****53	800		I	3.	DIS0AA0S	NOTRDY
	UNLABELED				RN	1.	
MT60		1600					IDLE
NT61	PACKC	1600					IDLE
	SYSTEMPF				RN	1.	
NT62		1600					IDLE
NT63		1600					IDLE
NT64		1600					IDLE

Figure 4-5d. Tape Status (E,T.) Display

FILE NAME TABLE (H) DISPLAY

With the H display the operator can obtain information about a file such as its status, type, and the control point to which it is assigned. When the display is on the left screen, the + or - key can be used to step the display forward or backward one page; the right screen is paged with the left and right parenthesis keys. More than one page exists if the message

MORE FILES FOLLOW.

appears at the bottom of the display. The format of each line is:

no name cp ty eq pr id stat

no Unique number (FNT ordinal) assigned to the file by the system when the file is created and retained by that file as long as it is in the system

name File name

cp Control point to which the file is assigned

ty File type (an asterisk following the file type indicates a read-only file):

- CM Common file (limited support)
- IN Input file
- FA Fast-attach file
- LI Library file
- LO Local file
- PM Direct access permanent file
- PR Print file
- PT Primary terminal file
- PH Punch file
- RO Rollout file
- SY System file
- TE Timed-event rollout (TEFT) file

eq EST ordinal of the device on which the file resides

pr Queue priority (for queue type files only)

id File identifier associated with the file

stat Status of the file; this field may contain either a numeric status code or the letters FL followed by the field length/100 for files in the input or rollout queues. A numeric status code appears in this field for all files other than those in the input or rollout queues. The status code consists of up to four octal digits (bits numbered 0 through 11 from right to left, respectively) and is defined as follows:

Bit Position

0	Set if file is not busy
1	Set if last operation was a write
2-3	If last operation was a read:
0	Incomplete
1	End-of-record (EOR)
2	End-of-file (EOF)
3	End-of-information (EOI)
	If last operation was a write or position:
0	Incomplete
1	Complete
4-5	Not used
6	Set if file has been written since attachment or creation
7	Set if file has been written since opened
8	Set if file has been opened
9-10	Not used
11	Set if labeled tape

The H display can also be set to indicate only files of a certain file type. For example:

H, x.

x.	A	All files
	C	Common files (limited support)
	I	Input files
	L	Local files
	O	Output files
	P	Punch files
	R	Rollout files
	T	Timed/event rollout (TEFT) files
	n	Control-point number

Entering H,L. for all local files followed by H,15. displays all local files for control point 15. Entering H,0. (zero) restores the display of all local files. To return to the main FNT display, enter H,0. (zero) then H,A.

Figure 4-6 illustrates the file name table (H) display.

BATCHIO (I) DISPLAY

The BATCHIO display shows the status of BATCHIO unit record devices. Each entry is in the following format.

bp	jobname	eq	rct	status
bp	Buffer point. A buffer point is established for each unit record device and remains constant as long as the EST table is not changed.			
jobname	System job name (name of job using the device)			
eq	Peripheral equipment (mnemonic and EST ordinal); for example:			
	CR11	Card reader		
	CP12	Card punch		
	LP20	Line printer		
rct	Repeat count (refer to the REPEAT command in section 3)			
status	Equipment status (for example, NOT READY; NOT READY status could be caused by pressing the STOP button).			

At the BATCHIO control point (B display), a message appears whenever a device is active. The message appears as:

```
n  BUFFERS ACTIVE
      n      Number of buffer points active
```

Figure 4-7 illustrates the BATCHIO status (I) display.

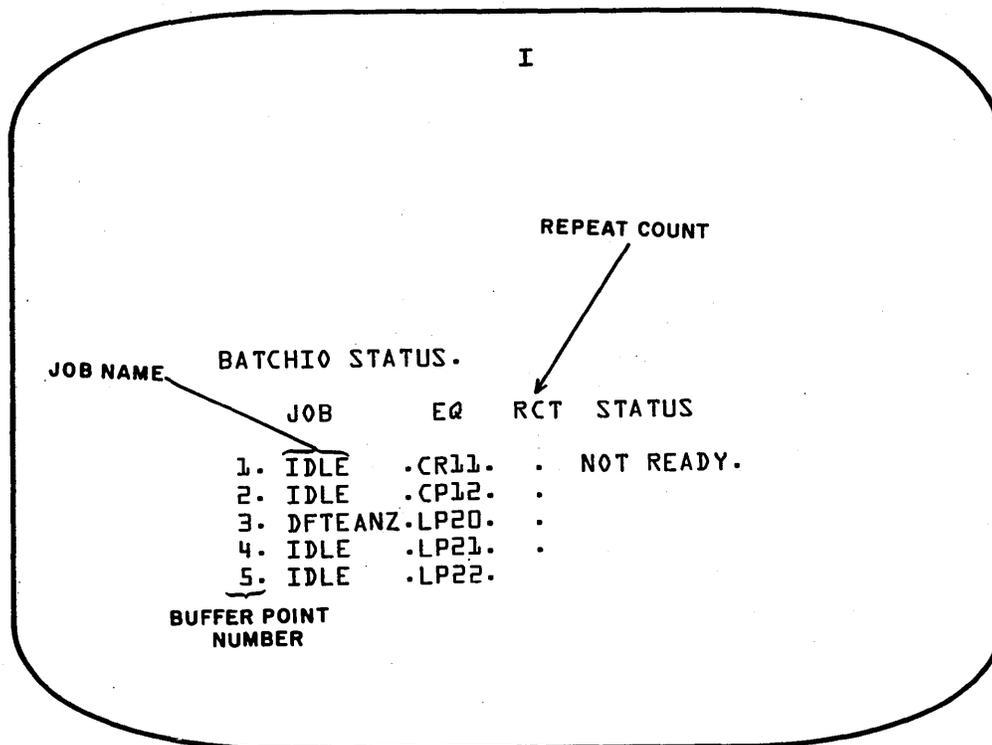


Figure 4-7. BATCHIO Status (I) Display

CONTROL POINT STATUS (J) DISPLAY

The J display is used to show the status of control points. The current buffer of control statements for a job are displayed, allowing the operator to anticipate future job requirements. The next control statement to be processed is intensified. The J display shows control point parameters: control point number, job name, time limit, accumulated CPU time, CPU status, contents of P register, reference address, field length, and equipment assigned to the control point.

Figure 4-8 illustrates the control point status (J) display.

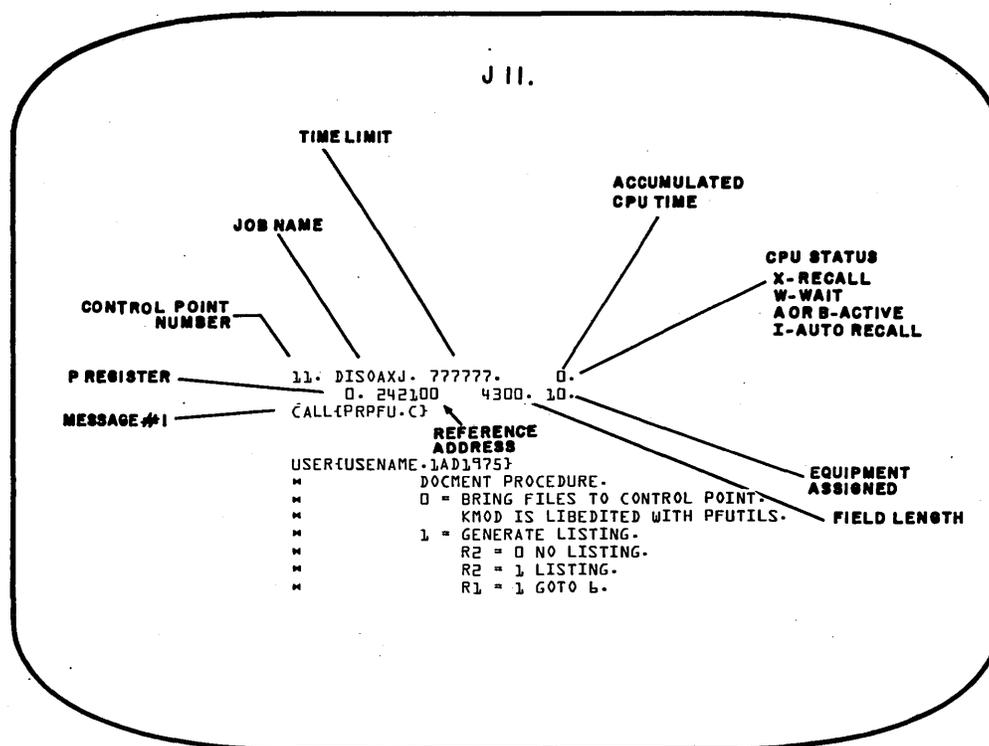


Figure 4-8. Control Point Status (J) Display

CENTRAL PROGRAMMABLE (K AND L) DISPLAYS

With these displays, a job at a control point can place information on the console screen and receive information from the keyboard. The information entered is not executed by DSD, but is used by the job. The job first issues a request message on the B display, asking the operator to bring up the K or L display. The operator should type:

K,n. or L,n.

where n is the control point number of the requesting job. When the display is attached to control point n, the type-in (K. followed by data) is transferred to a specified area of the job field length when the carriage return terminates the type-in. The job can request and accept information from the operator with great flexibility. Normally, these displays are used for utility programs (refer to sections 5 and 6). Note that these displays are control-point oriented. That is, paging forward or backward through the display for each control point is accomplished with the + and - keys, respectively. The number of the control point also appears at the top of display next to the letter designator (for example, K5).

FILE (N) DISPLAY

The operator can display a file on the left screen by typing:

DISPLAY,xxx.

where xxx is the FNT ordinal (refer to the H display). The file is displayed on the N display. Any subsequent commands

Ny. or yN. (where y is a legal display letter)

cause the last file selected via the DISPLAY command to be displayed. At the top of the display is the file name, the control point to which the file is attached, and the file status (blank, EOR, and EOF). Paging through the file is accomplished by using the + and - keys. Approximately 100 central memory words of the file are displayed at a time.

The data being displayed is contained in the second 100₈ words of the system control point area. In addition, words 76₈ and 77₈ contain file status and disk linkage information, respectively.

PP COMMUNICATIONS AREA (P) DISPLAY

The P display shows the first three words of each peripheral processor's communication area.

Line 1	Input register; normally contains the first three characters of the program name. The fourth character is the control point. This is followed by the input parameters (FET address, function call, etc).
Line 2	Output register; one of the system requests (RCHM, SFBM, etc.).
Line 3	First word of message buffer; the first 10 characters of the last message issued.

The name of the current monitor function being issued by a peripheral processor is displayed to the left of its output register. Normally, this display is used by system programmers for debugging purposes. Paging forward or backward through the display is accomplished with the + and - keys, respectively. Note that this is effective only for 20 PPU systems. In this case, two pages are required; the first page contains PPU's 0 through 11 octal and the second page contains PPU's 20 through 31 octal.

Figure 4-9 illustrates the PP communications area (P) display.

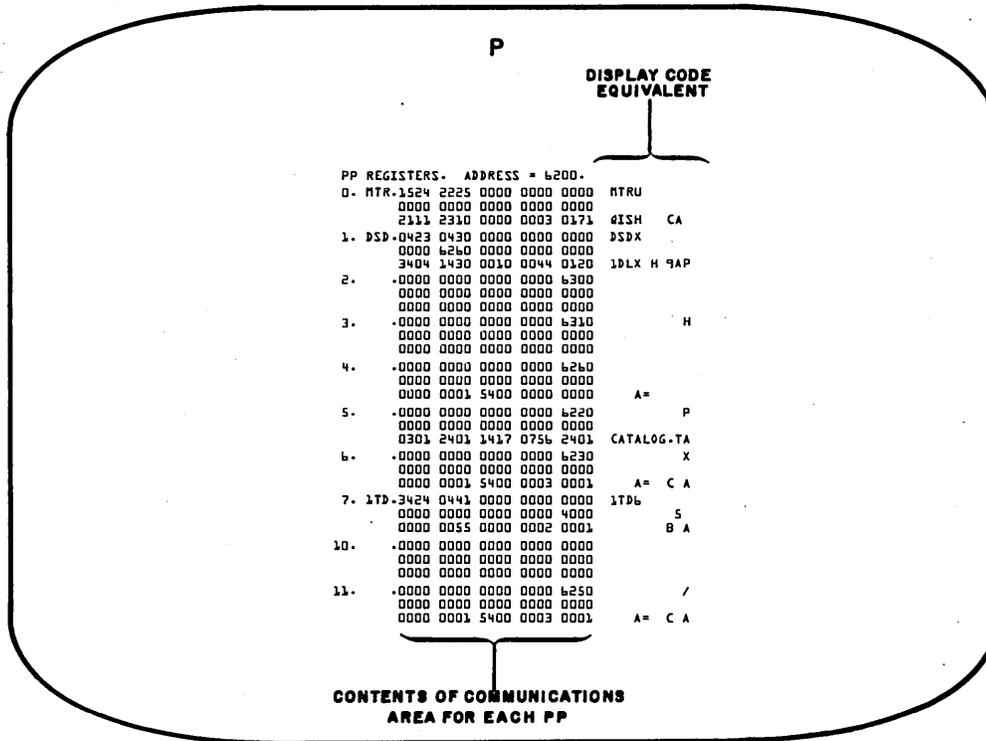


Figure 4-9. PP Communications Area (P) Display

ACTIVE JOB QUEUES (Q) DISPLAY

The Q display shows the status of the active input, rollout, and output queues. Three columns are displayed, one for each queue. Each entry is in the following format.

no	jobname	queue priority	field length/100
no	FNT ordinal of the job (same as on H display)		
jobname	System-assigned job name		
queue priority	Priority assigned to the job within the queue		
field length/100	Job field length divided by 100 required to be assigned to central memory		

For timed/event rollout (TEFT) files, the entry is followed by two asterisks.

Figure 4-10 illustrates the active job queues display.

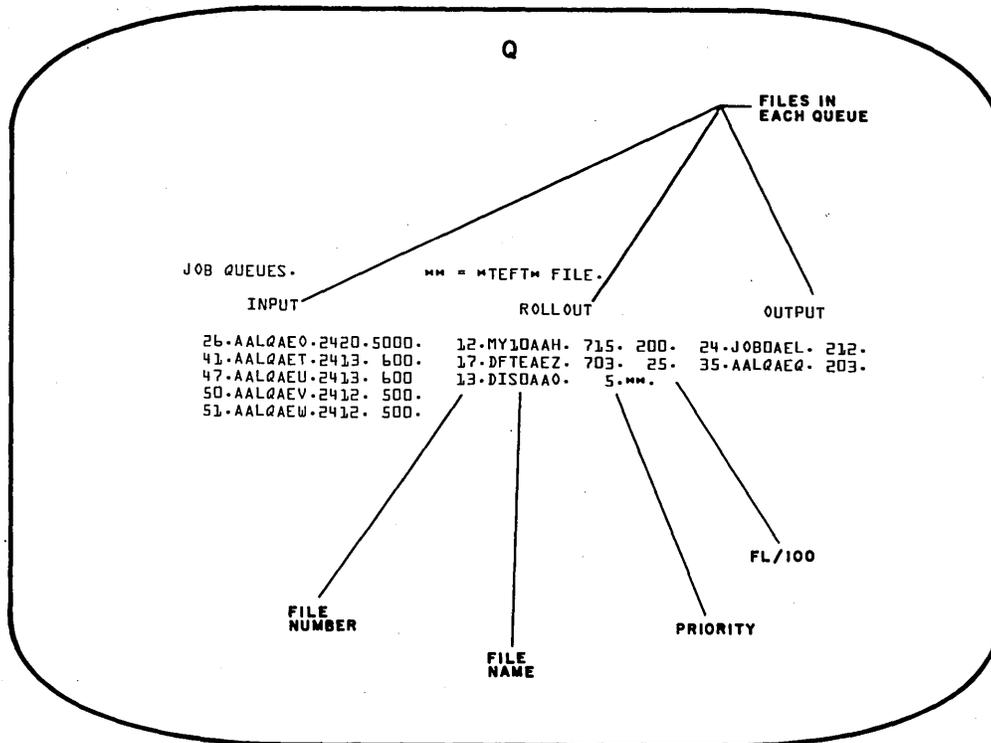


Figure 4-10. Active Job Queues (Q) Display

EXPORT STATUS (R) DISPLAY

The R display shows the current status of users logged in on 200 user terminals or 731-12 or 732-12 remote batch terminals. A header line contains the total number of users since Export was initialized and the current number of active users. Each entry appears in the following format.

line	login	user	read	print	jobsin	jobsout
line	Multiplexer line on which the user is logged in					
login	Time the user logged in					
user	User number of current user					

```

read      Reader status:
          IDLE (no data currently required from reader)
          NOT READY
          Name of job being read
print     Printer status:
          SUSPENDED (transmission of a print file has been suspended by
          terminal operator).
          IDLE (no data currently being sent to printer)
          Name of the job being printed
jobsin    Number of jobs input since login
jobsout   Number of jobs output since login

```

Figure 4-11 illustrates the Export status display.

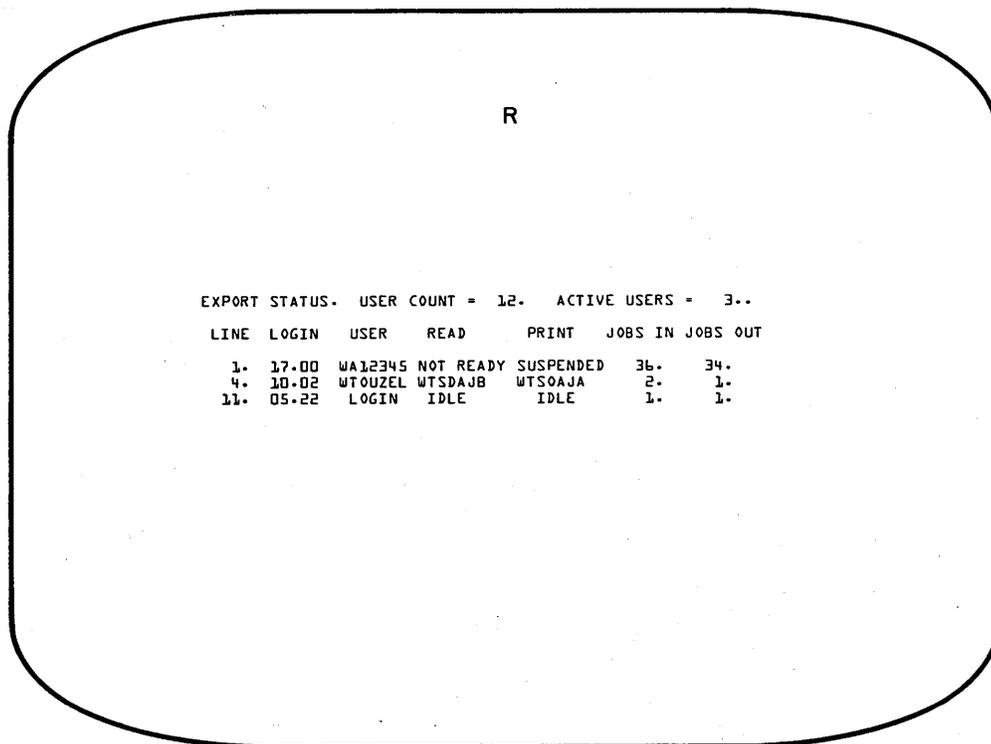


Figure 4-11. Export Status (R) Display

SYSTEM CONTROL INFORMATION (S) DISPLAY

The S display shows the parameters used to control job flow for the various origin types. Each entry appears in the following format.

jobtype	queue	op	lp	up	in
jobtype	Job origin type:				
	SY	System			
	BC	Local batch			
	TX	Time-sharing			
	EI	Export/Import			
	MT	Multiterminal			
queue	Queue type; one of each of the following for each job type:				
	IN	Input			
	RO	Rollout			
	OT	Output			
op	Original priority (priority at which job is initially set in the queue)				
lp	Lowest priority at which a job can be entered and aged				
up	Highest priority a job can reach in the queue; aging stops when this priority is reached. (Job is also given this priority when initially assigned to central memory.)				
in	Interval at which jobs are aged while in the queue.				

Refer to section 3 for further information about these parameters.

At the bottom of the display are six entries controlling the time or delay in system operations. These are installation parameters used to control system operation.

JS	Job scheduler delay interval (seconds)
CR	CPU program recall (milliseconds)
AR	PPU auto recall (milliseconds)
JA	Job advance (milliseconds)
CS	CPU switch (milliseconds)
TC	Threshold count for corrected SECDED single bit errors.

The system status word is displayed at the bottom of the S display in five groups of four octal digits. The display code equivalent is shown at the right of the control word. The bits of the control word that may be set and the meaning of each are listed (refer to section 3 for a description of the commands that can be used to change these conditions).

S

SYSTEM CONTROL INFORMATION.

JOB TYPE	QUEUE	PRIORITIES			IN
		OP	LP	UP	
SY.	IN.	6600.	700.	3000.	1.
	RO.	6000.	100.	1000.	1.
	OT.	400.	100.	7700.	1.
BC.	IN.	2400.	2000.	4010.	1.
	RO.	2400.	1010.	4004.	1.
	OT.	200.	100.	7000.	1.
EI.	IN.	3400.	2400.	4010.	1.
	RO.	3400.	1400.	4006.	1.
	OT.	200.	100.	7600.	1.
TX.	IN.	4000.	3770.	7006.	1.
	RO.	4004.	3740.	7000.	1.
	OT.	200.	100.	7000.	1.
MT.	IN.	6774.	6700.	7400.	1.
	RO.	6774.	4000.	7400.	1.
	OT.	6000.	100.	7700.	1.

DELAYS.

JS	CR	AR	JA	CS	TC
1.	10.	1000.	10.	10.	100.

CONTROL 0001 1200 0000 0002 0000 AJ B

Figure 4-12. System Control Information (S) Display

TIME-SHARING STATUS (T) DISPLAY

The T display shows the status of time-sharing terminals. A header line contains the number of successful logins since TELEX was activated and the number of currently active and logging-in users. Each entry is in the following format.

line	userno	status	lastop	system
line		Line number on which the user is logged in (ports 0 to 3 are reserved; port 4 is physical port 0 on the first multiplexer used).		
userno		User number		
status		Mode of terminal operation:		
		E	User job currently in execution	
		C	TELEX waiting for commands to direct job processing	
		I	User job is waiting for input	
		O	User job is transmitting output	
		R	Job in execution has been rolled out and is waiting to be rolled back in	
		T	User job has reached completion and has terminated	
lastop		Last TELEX command entered		
system		Subsystem currently being used:		
		BAS	BASIC	
		BAT	Batch	
		EXE	Execute	
		FOR	Time-Sharing FORTRAN	
		NUL	None	
		TRA	TRANSACTION	

Figure 4-13 illustrates the time-sharing status (T) display.

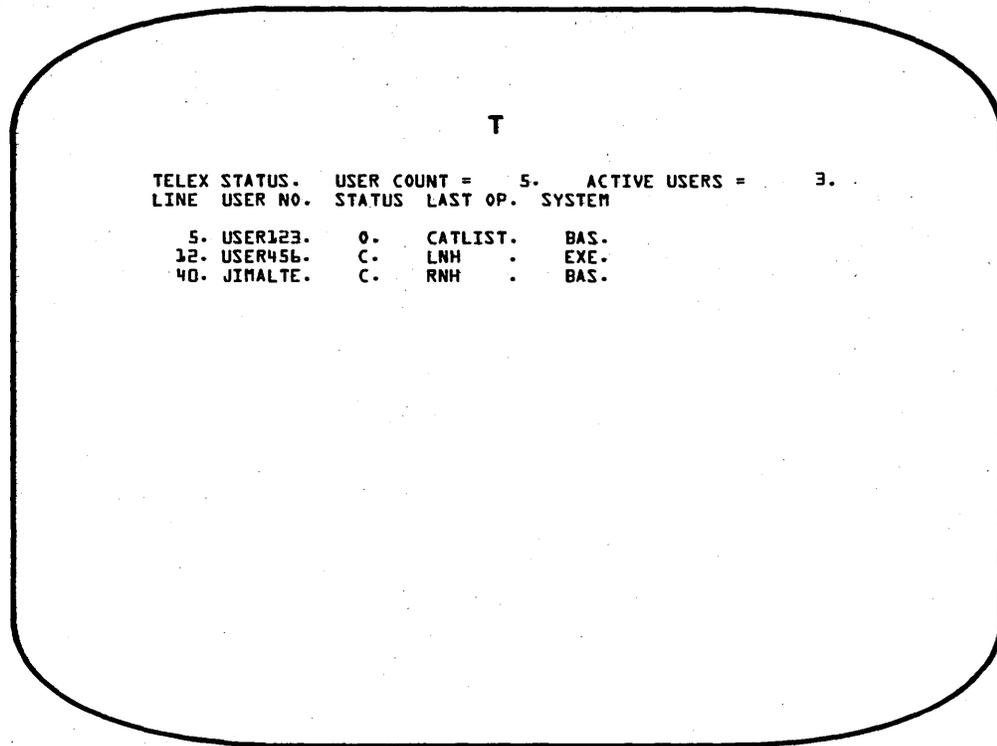


Figure 4-13. Time-Sharing Status (T) Display

MONITOR FUNCTIONS (Y) DISPLAY

The Y display lists all monitor function mnemonics and their respective codes. Codes 1 through 35 represent PP monitor functions; codes 36 through 77 represent CP monitor functions. Figure 4-14 illustrates the Y display.

Y		
MONITOR FUNCTIONS.		
AEQM	1.	
AMSM	2.	
CCHM	3.	
DCHM	4.	
DEQM	5.	
DFMM	6.	
OFEM	7.	
ONEM	10.	
PRLM	11.	
RCHM	12.	
REMM	13.	
REQM	14.	
ROCM	15.	
RPRM	16.	
RJSM	17.	
SCHM	20.	
RSTM	21.	
RSYM	22.	
SMSM	23.	
STPM	24.	
TGPM	25.	
TSEM	26.	
DEPM	27.	
DRCM	30.	
SCPM	31.	
EATM	32.	
DSWM	33.	
	34.	
ABTM	36.	
CCAM	37.	
CEFM	40.	
DCPM	41.	
DJSM	42.	
DTKM	43.	
DPPM	44.	
ECSM	45.	
RCLM	46.	
RCPM	47.	
RDCM	50.	
REWM	51.	
ACTM	52.	
RPPM	53.	
RSJM	54.	
RTCM	55.	
SFBM	56.	
STBM	57.	
UADM	60.	
WEWM	61.	
JACM	62.	
DLKM	63.	
TDAM	64.	
TIOM	65.	
RTLm	66.	
LCEM	67.	
CSTM	70.	
CKSM	71.	
LDAM	72.	
	73.	
	74.	
	75.	
	76.	

Figure 4-14. Monitor Functions (Y) Display

DIRECTORY (Z) DISPLAY

The Z display lists all the displays available to the console operator under DSD control. Figure 4-15 illustrates the directory (Z) display.

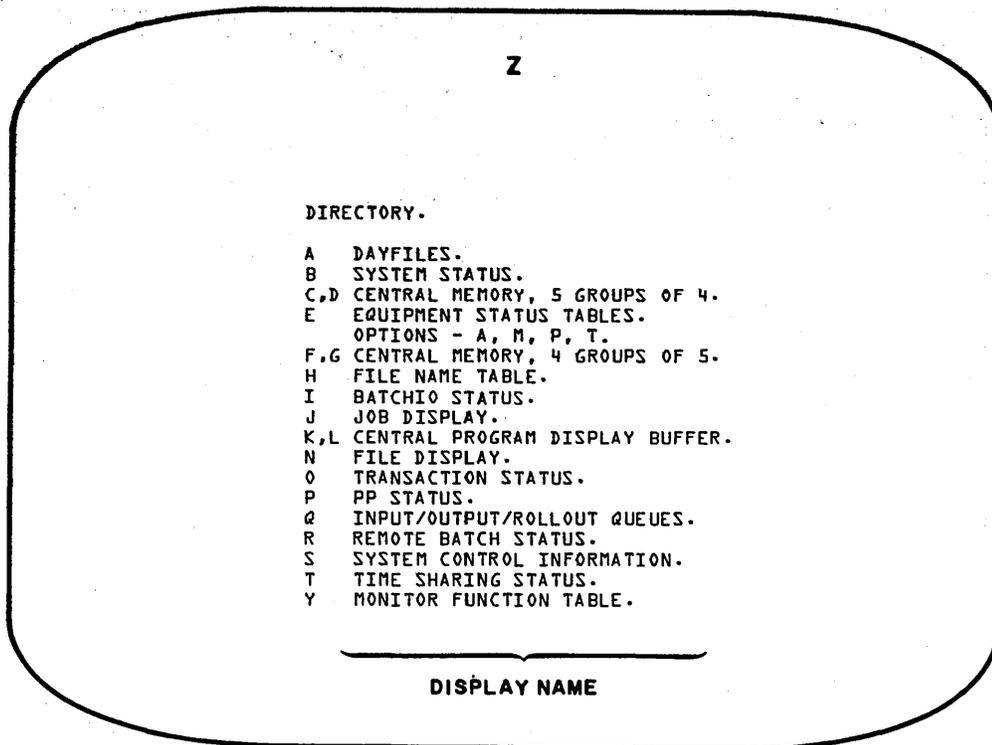


Figure 4-15. Directory (Z) Display

The permanent file supervisor (PFS) controls five utility programs that are used to maintain the permanent file system. The function of each utility program is as follows:

- **PFDUMP** Dump permanent files. This utility copies permanent files residing on mass storage to an archive file on a backup storage device (typically magnetic tape). Archive files created by PFDUMP may be reloaded by the PFLOAD utility.
- **PFLOAD** Load permanent files. This utility loads files from an archive file onto a mass storage permanent file device.
- **PFCAT** Catalog permanent file device. This utility catalogs permanent file catalog tracks and generates a report. The possible reports are...
 1. Listing of catalog file with files grouped by user index.
 2. Statistical report on device usage.
- **PFATC** Catalog archive file. This utility generates a catalog of permanent files stored on an archive file.
- **PFCOPY** Copy archive file(s) to control point. This utility extracts permanent files from an archive file created by PFDUMP and copies them to one or more files at a control point.

For a detailed description of operation and the use of optional parameters for each utility program listed, refer to section 2 in part IV (System Maintenance) of the Installation Handbook. The information and procedures contained in this section describe only the more commonly used features of the PFDUMP and PFLOAD utilities.

ARCHIVE FILE

The permanent files accumulated on mass storage can be dumped in whole or in part to a backup device (typically magnetic tape) as assurance against a device malfunction that may result in loss of permanent files, or to free a device temporarily for preventive maintenance. Each PFDUMP operation creates a multirecord archive file on which each physical record represents a permanent file that was part of the dump. The PFLOAD utility can then be used to reload the permanent files present on the archive file. The status of files loaded becomes that which existed at the time the archive file was created.

PFDUMP PROCEDURES

Dumping of permanent files to a backup archive file may be accomplished through keyboard entry to a K display (under DSD control only), or by direct keyboard entry under DSD or DIS control.

The following procedure describes K display usage for PFDUMP operations under DSD control:

1. Call PFS (permanent file supervisor) by typing

X. PFS. (CR)

2. Examine the DSD job status (B) display. When PFS is scheduled to a control point, it is indicated on the B display. The message...

REQUEST *K* DISPLAY

appears in the message field for that control point.

3. Activate the K display for that control point by typing

K, n. (CR) (n is the control point number)

The K display (Figure 5-1) appears on the left console screen. Instructions at the bottom of the display describe how to select the utility function to be performed.

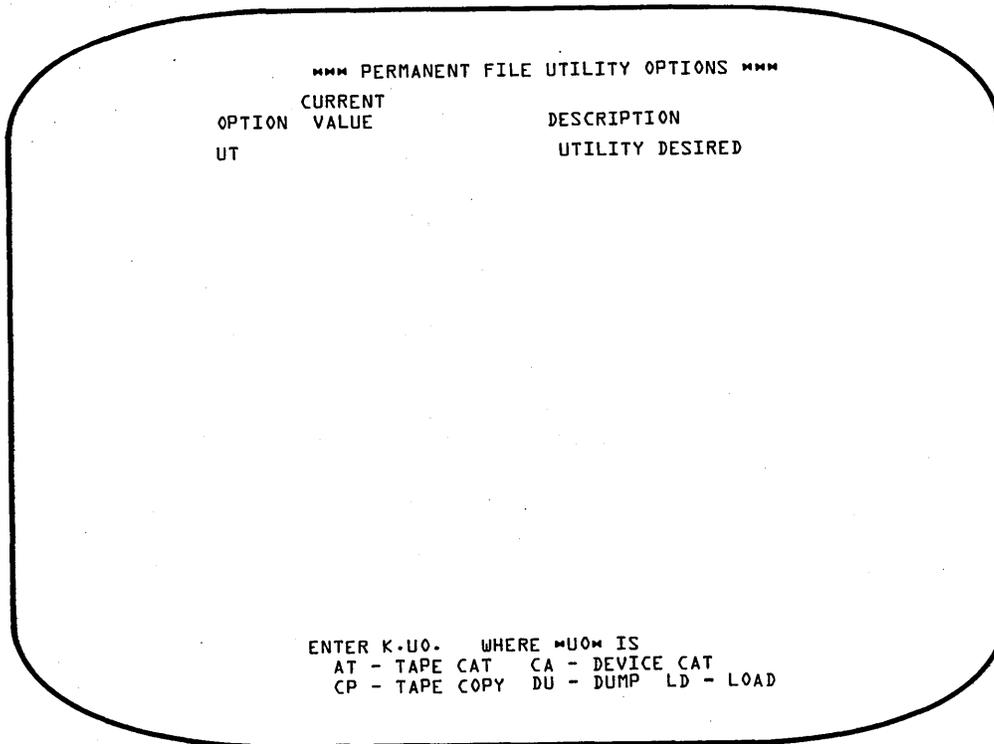


Figure 5-1. Initial Left Screen K Display

4. Select the PFDUMP utility by typing

K. DU. (CR)

When this entry is executed, the initial left screen K display (Figure 5-1) is automatically replaced with the PFDUMP K display (Figure 5-2). This display lists and defines option parameters which may be selected for the PFDUMP utility. † The center column (CURRENT VALUE) lists the default value assumed for each option not selected. The PFDUMP operation is performed according to the criteria specified by these options. The letters TCE appearing after the LO option and CAMIDBP after the OP option indicate the legal values that may be specified for those options. The right screen K display (Figure 5-3) defines the values listed for both options and describes the method of entry. To activate the right screen K display, type

KK. (CR)

*** PERMANENT FILE UTILITY OPTIONS ***		
OPTION	CURRENT VALUE	DESCRIPTION
UT	LD	UTILITY DESIRED
FN	= 0	FAMILY NAME
PN	= 0	PACK NAME
DN	= 0	DEVICE NUMBER
T	= TAPE	ARCHIVE FILE NAME
LO	= 0	LIST OPTIONS VALID - TCE
L	= OUTPUT	OUTPUT FILE NAME
OP	= 0	UTILITY OPTIONS VALID - CAMIDBRNEO
NT	7-TRACK	NINE TRACK
DE	= 0	0-DFLT,1-556,2-200,3-800,4-1600
NR	REWIND	NO REWIND
NU	-- N/A --	NO REWIND - UNLOAD
SF	= 0	SKIP FILE
N	= 1	NUMBER OF FILES TO PROCESS
DT	= 0	DATE YYMMDD
TM	= 0	TIME HHMMSS
UI	= 0	USER INDEX
PF	= 0	PERMANENT FILE NAME
V	-- N/A --	VERIFY FILE GENERATION
VF	-- N/A --	VERIFY FILE NAME
DI	= 0	DESTINATION UI
DD	= 0	DESTINATION DEVICE NUMBER
MF	-- N/A --	MASTER FILE NAME
UN	= 0	USER NUMBER

NOTE - N/A DENOTES INVALID PARAMETER

FILE NAME	USER INDEX
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OPTIONS DEFINED ON RIGHT SCREEN DISPLAY

Figure 5-2. Left Screen K Display for PFDUMP Utility

† Refer to section 2 in part IV of the Installation Handbook for complete information concerning use of PFDUMP options.

5. Enter PFDUMP parameters in the following format.

K. option₁=value₁, option₂=value₂, ..., option_n=value_n. (CR)

If it is desired to dump all permanent files residing on the normal family of permanent file devices, no options need be specified (there is typically only one family of permanent file devices present in the system). This is considered a full permanent file system dump. In this case, the default value for all options will be assumed. For example, the dump will be written to an archive file named TAPE. If the archive file is to reside on magnetic tape, a 7-track tape unit must be assigned (see step 6); system default density is assumed.

OPTION	DESCRIPTION
UT *UTILITY*	*LDM - PFLoad *DUM - PFDUMP *CAM - PFCAT *ATM - PFATC *CPM - PFCOPY
LO *LIST OPTION*	T - FILES PROCESSED CATALOG C - PERMANENT FILE DEVICES CATALOG E - ERRORS S - SUMMARY
OP *UTILITY OPTIONS*	C - CREATION* A - LAST ACCESS* M - LAST MODIFICATION* I - INDIRECT ACCESS** D - DIRECT ACCESS** B - BEFORE P - PURGE AFTER DUMP R - REPLACE N - NONINITIAL LOAD Q - ADD CATALOG AND PERMIT RECORDS E - EXTRACT CATALOG IMAGE RECORD O - OMIT CATALOG IMAGE RECORD

NOTE: OPTIONS ARE ENTERED AS FOLLOWS -
LO = TCS OR
OP = CIBP

* ONLY ONE TYPE OF DATE MAY BE SPECIFIED
** ONLY ONE ACCESS OPTION MAY BE SPECIFIED

Figure 5-3. Right Screen K Display

If it is desired to dump only those files that have been created or modified after a specified date, a selective dump is used. That is, the OP=M option is specified along with a date and time origin (DT=date and TM=time). No other options need be specified. In this case, the parameter entry would be as follows:

K. OP=M, DT=yymmdd, TM=hmmss. (CR)

yymmdd Date (year, month, and day)
hmmss Time of day (hours, minutes, and seconds) after which all
 new or modified permanent files will be dumped

6. Initiate PFDUMP processing by typing

K.GO. (CR)

When PFDUMP begins processing, it requests assignment of the device on which the archive file is to reside. This is indicated by a flashing REQUEST message that appears on the B display.

7. Assign the appropriate device by entering the following DSD command.

n. ASSIGN, xx. (CR)

n Control point requesting assignment
xx EST ordinal of the device to be assigned

It is also possible to call PFDUMP and specify appropriate options without using the K displays. This is accomplished with a single keyboard entry in the following format.

X. PFDUMP(option₁=value₁, option₂=value₂, . . . , option_n=value_n) (CR)

Refer to the illustrations of K displays (Figures 5-2 and 5-3) for a list and description of all valid options. It should be noted that if an error is encountered in this entry, control will be returned to PFS and the REQUEST *K* DISPLAY message appears on the DSD B display. Parameters may then be entered via the K display as described in the preceding procedure.

PFLOAD PROCEDURES

The PFLOAD utility is used to load permanent files onto an initialized mass storage permanent file device from an archive file created by the PFDUMP utility. It is also possible to load files onto a device on which permanent files currently reside (device not initialized). However, for the purposes of this discussion, it is assumed that the mass storage device to be loaded is initialized (refer to the description of the INITIALIZE command in section 3). For information concerning loading to a device on which permanent files currently reside (noninitial load), refer to section 2 in part IV of the Installation Handbook.

The PFLOAD procedures contained in this section pertain only to two types of loading; a full permanent file load or an incremental load. Each type is described briefly as follows:

- Full permanent file system load. A full load is performed by reloading an archive file that contains a full permanent file system dump. Either the entire permanent file system or a specific device within the permanent file family may be reloaded.
- Incremental load. An incremental load is initiated from the most recent selective dump archive file. The selective dump archive contains only the permanent files which had been modified or created after a date and time specified in the PFDUMP procedure. Thus, the first step of an incremental load is to restore the most recently created or modified files to the permanent file system. After the first selective dump archive file has been processed, additional archive files may be loaded (selective or not) to complete loading of the permanent file system (or a specific device within the permanent file family).

A check is made when incrementally loading each permanent file to determine if the file has already been loaded, or if the file was purged before the most recent selective dump archive file was created. This check is possible because catalog images of all files active in the permanent file system are written as the first record (or records) of each selective dump archive file. This record is called the catalog image record (CIR). When an incremental load is initiated (described in the procedure that follows), the CIR from the most recent selective dump archive file is read to a random mass storage file and the permanent files residing on that archive are loaded. Then, subsequent archive files are read in the reverse order in which they were dumped. Each permanent file residing on an archive is compared with the CIR. If a match is found on the CIR, the file is loaded (unless options specified in the call to PFLOAD prohibit loading) and that entry in the CIR is cleared. Each time a file is loaded from an archive file, its corresponding entry in the CIR is cleared. Thus, when a file is encountered on an archive file with no corresponding entry on the CIR, that file is skipped because it has either been purged or previously loaded.

Loading of permanent files from an archive file can be accomplished through keyboard entry to a K display (under DSD control only), or by direct keyboard entry under DSD or DIS control.

The following procedure describes K display usage for PFLOAD operations under DSD control.

1. Call PFS (permanent file supervisor) by typing

X. PFS. (CR)

2. Examine the DSD job status (B) display. When PFS is scheduled to a control point, it is indicated on the B display. The message...

REQUEST *K* DISPLAY

appears in the message field for that control point.

3. Activate the K display for that control point by typing

K, n. (CR) (n is the control point number)

The K display (Figure 5-1 under PFDUMP Procedures) appears on the left console screen. Instructions at the bottom of the display describe how to select the utility function to be performed.

4. Select the PFLOAD utility by typing

K.LD. (CR)

When this entry is executed, the initial left screen K display (Figure 5-1) is automatically replaced with the PFLOAD K display (Figure 5-4). This display lists and defines option parameters which may be selected for the PFLOAD utility. † The center column (CURRENT VALUE) lists the default value assumed for each option not selected. The PFLOAD operation is performed according to the criteria specified by these options. The letters TCE appearing after the LO option and CAMIDBRNEO after the OP option indicate the legal values that may be specified for those options. The right screen K display (Figure 5-3 under PFDUMP Procedures) defines the values listed for both options and describes the method of entry. To activate the right screen K display, type

KK. (CR)

5. Enter PFLOAD parameters in the following format.

K.option₁=value₁, option₂=value₂, . . . , option_n=value_n. (CR)

If it is desired to perform a full permanent file system load, it is possible that no options need be specified. However, this is true only if the default values were used for the FN (family name) and T (archive file name) options when the full dump archive file was created by PFDUMP. Also, if the archive file was created on magnetic tape, as is normally done, a 7-track tape unit was used by default. If these options were other than default when the archive file was created, the same options must be specified when reloading.

It is also possible to perform a full load to a selected permanent file device by specifying the DN option as follows:

K.DN=nn. (CR) (nn is the device number)

If it is desired to perform incremental load operations, the OP=M option is specified. This entry is as follows:

K.OP=M. (CR)

or

K.DN=nn, OP=M. (CR)

In the first form, a full incremental load is specified. Only the selected device specified by nn is incrementally loaded if the second form is entered.

† Refer to section 2 in part IV of the Installation Handbook for complete information concerning use of PFLOAD options.

6. Initiate PFLOAD by typing

K. GO. (CR)

When PFLOAD begins processing, the following message appears at the bottom of the left screen K display requesting assignment of the archive file to be loaded.

ASSIGN TAPE.

This is also indicated by a flashing REQUEST message that appears on the B display.

7. Assign the appropriate device on which the archive file resides by entering the following DSD command.

n. ASSIGN, xx. (CR)

n Control point requesting assignment

xx EST ordinal of the device to be assigned

A check is made to determine if the mass storage device(s) to be loaded are initialized. If they are not, the following message appears at the bottom of the left screen K display and PFLOAD halts.

DEVICE NOT INITIALIZED.

If the intention is to load an initialized device, each device to be loaded must be initialized and the PFLOAD utility reinitiated. Loading of a device on which permanent files already exist can also be performed (refer to section 2 of part IV in the Installation Handbook for further information).

If a full incremental load is being performed, the following message appears at the bottom of the left screen K display after loading of the first (most recent) selective dump archive file is completed.

ENTER E TO TERMINATE LOADING.
L TO LIST REMAINING FILES.
GO TO RESUME INCREMENTAL LOAD.

To list the names of remaining files that have not yet been loaded, enter

K. L. (CR)

The other entries that can be made are self-explanatory.

It is also possible to call PFLOAD and specify appropriate options without using the K displays. This is accomplished with a single keyboard entry in the following format.

X. PFLOAD(option₁=value₁, option₂=value₂, ..., option_n=value_n) (CR)

Refer to the illustrations of K displays (Figures 5-3 and 5-4) for a list and description of all valid options. If an error is encountered in this entry, control will be returned to PFS and the REQUEST *K* DISPLAY message appears on the DSD B display. Parameters may then be entered via the K display as described in the preceding procedure.

*** PERMANENT FILE UTILITY OPTIONS ***		
OPTION	CURRENT VALUE	DESCRIPTION
UT	DU	UTILITY DESIRED
FN	= 0	FAMILY NAME
PN	= 0	PACK NAME
DN	= 0	DEVICE NUMBER
T	= TAPE	ARCHIVE FILE NAME
LO	= 0	LIST OPTIONS VALID - TCE
L	= OUTPUT	OUTPUT FILE NAME
OP	= 0	UTILITY OPTIONS VALID - CAMIDBP
NT	= 7-TRACK	NINE TRACK
DE	= 0	0-DFLT,1-556,2-200,3-800,4-1600
NR	REWIND	NO REWIND
NU	UNLOAD	NO REWIND - UNLOAD
SF	= 0	SKIP FILE
N	= -- N/A --	NUMBER OF FILES TO PROCESS
DT	= 0	DATE YYMMDD
TH	= 0	TIME HHMMSS
UI	= 0	USER INDEX
PF	= 0	PERMANENT FILE NAME
V	NO VERIFY	VERIFY FILE GENERATION
VF	= PFVER	VERIFY FILE NAME
DI	= -- N/A --	DESTINATION UI
DD	= -- N/A --	DESTINATION DEVICE NUMBER
MF	= -- N/A --	MASTER FILE NAME
UN	= 0	USER NUMBER

NOTE - N/A DENOTES INVALID PARAMETER

FILE NAME	USER INDEX

OPTIONS DEFINED ON RIGHT SCREEN DISPLAY

Figure 5-4. Left Screen K Display for PFLOAD Utility

This section describes the operation of six utility programs that provide control over I/O queue files (input, print, punch) and dayfiles (system, account, error log). The queue file supervisor (QFSP) controls four of the utility programs used to manipulate or provide information concerning I/O queue files and dayfiles. The functions of these utilities are:

- **QREC** This utility provides the capability to deactivate or activate selected I/O queue files. QREC deactivates an I/O queue file by removing its entry from the file name table (FNT) and creating a corresponding entry in the inactive queue file table (IQFT) file. An IQFT file exists on each mass storage device containing inactive I/O queue files. I/O queue files recovered across a level 0 deadstart are also inactive and will not be processed by the system until activated by QREC. Typically, the IPRDECK contains a call to QREC and queue files recovered across level 0 deadstart are activated automatically without operator intervention. An inactive queue file is activated or requeued by removing its entry from the IQFT file and making a corresponding entry in the FNT. QREC also provides the capability to purge selected inactive queue files.
- **QLIST** This utility provides a listing of inactive I/O queue files. This list may include all inactive queue files in the system or a selected subset based on options specified when calling the utility.
- **DFTERM** This utility provides the capability to terminate an active or inactive dayfile and retain it as a direct access permanent file for later interrogation or processing. When an active dayfile (that is, the current system, account, or error log dayfile) is terminated, information in the central memory buffer for that dayfile is written to mass storage to be included with the permanent file, and a new active dayfile is started. The new dayfile may reside on the same device or a new device may be specified.

Terminating an inactive dayfile has no effect on the currently active dayfiles. Inactive dayfiles are not used by the system. Furthermore, the presence of an inactive dayfile in the system is possible only under unusual conditions. For example, assume that the system is deadstarted and the device which previously contained the account dayfile is turned off. In this case, a new account dayfile is started on another device. Two devices in the system now contain account dayfiles. If both devices are turned on when the system is next deadstarted, two account dayfiles are recovered. The most recent account dayfile is made active and is used by the system. The remaining account dayfile is made inactive.

- DFLIST This utility provides a listing of all dayfiles which have been made permanent by the DFTERM utility.

Two additional utilities which operate independent of the queue file supervisor (QFSP) provide the capability to dump and reload I/O queue files. The function of these utilities is as follows:

- DMQ This utility is used to dump selected queue files to a designated mass storage or magnetic tape file (typically a tape file). As each queue file is dumped to the specified dump file, its associated FNT entry is cleared, and its mass storage space is released. Only active I/O queue files may be dumped.
- LDQ This utility is used to reload files which have previously been dumped by the DMQ utility. As each file is reloaded, a corresponding entry is made in the FNT and the files again become active I/O queue files.

Information concerning the operation and use of each queue/dayfile utility is described in the remainder of this section. However, because many of the functions performed by these utilities can affect overall system performance and job throughput, the operator should not invoke any utility, other than QLIST and DFLIST, unless specifically directed to do so.

QREC PROCEDURES

Use of the QREC utility can be accomplished through keyboard entry to a K display (under DSD control only) or by direct keyboard entry under DSD or DIS control.†

The following procedure describes K display usage for QREC operations under DSD control.

1. Call QFSP (queue file supervisor) by typing

X.QFSP. (CR)

2. Examine the DSD job status (B) display. When QFSP is scheduled to a control point, it is indicated on the B display. The message

REQUEST*K*DISPLAY

appears in the message field for that control point.

3. Activate the K display for that control point by typing

K,n. (CR) (n is the control point number)

The K display for QFSP (Figure 6-1) appears on the left console screen. Instructions at the bottom of the display describe how to select the utility desired (QREC or DFTERM).

† The QREC utility may also be invoked by control statement from local or remote batch and time-sharing origin jobs, providing the user is validated for system origin privileges and the system is in DEBUG mode.

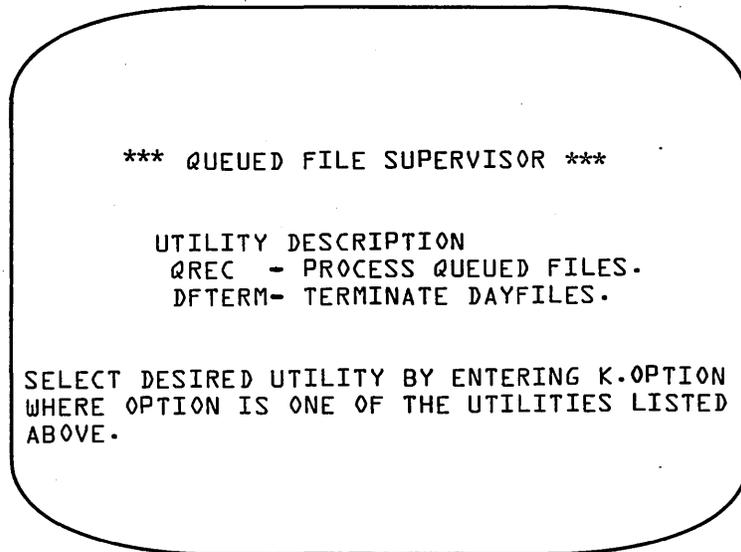


Figure 6-1. QFSP K Display

4. Select the QREC utility by typing

K.QREC (CR)

When this entry is processed, the QFSP display is automatically replaced with the initial QREC K display (Figure 6-2).

It is also possible to call QREC directly by substituting the following steps for steps 1 through 3.

- a. Enter X.QREC. (CR)

When QREC is scheduled to a control point the message

REQUEST*K*DISPLAY

appears at a control point on the DSD B display.

- b. Enter K,n. (CR) (n is the control point number)

This activates the initial QREC K display (Figure 6-2) on the left console screen.

```

*** QUEUED FILE REQUEUING ***

INACTIVE QUEUES RESIDE ON FOLLOWING FAMILIES {*=BLANK NAME}.
SYSTEM          PACKET

OPTIONS          DESCRIPTION
FM = ALL        FAMILY FOR DEVICES {1-7 CHARACTERS}.
DN = ALL        DEVICE NUMBERS {1-77B, ALL}.
FU = ALL        FAMILY FOR USER INDEX {1-7 CHARACTERS}.
UI = 08        USER INDEX RANGE {0-377777B}.
                 377777B
DA = 75/04/09.  QUEUED DATE RANGE {YYMMDD}.
                 75/04/14.
JN =           JOBNAMES {4 OR 7 CHARACTERS}.
                 JOBNAME WILL BE CLEARED IF
                 PREVIOUSLY ENTERED.

ID = 08        ID OF FILES TO PROCESS {0-77B}.
                 77B
L = OUTPUT     FILE TO RECEIVE OUTPUT {1-7 CHARACTERS}.
OP = RI        PROCESS OPTION {2 CHARACTERS}.
                 RP - SELECTION SPECIFIED FILES, PURGE OTHERS.
                 RI - REQUEUE SPECIFIED FILES, IGNORE OTHERS.
                 PI - PURGE SPECIFIED FILES, IGNORE OTHERS.
                 DI - DEQUEUE SPECIFIED FILES, IGNORE OTHERS.

{OT = FT}     REQUEUE BY ORIGIN TYPE AND FILE TYPE.
                 OPTION WILL BE CLEARED IF PREVIOUSLY
                 SELECTED. * = OPTION SELECTED.
                 OT = ORIGIN TYPE  FT = FILE TYPE
                 I P P          BC-BATCH          IN-INPUT
                 N H R          EI-EXPORT          PH-PUNCH
BC - ***          SY-SYSTEM          PR-PRINT
EI - ***
SY - ***
TX - ***          TX-TELEX

```

Figure 6-2. Initial QREC K Display

The initial QREC K display lists and defines option parameters which may be selected. These options specify the criteria which determines the function to be performed by the QREC utility. The value specified for each option illustrated in Figure 6-2 is the default value assumed if that option is not selected. Table 6-1 lists each option and provides a detailed description of its use.

TABLE 6-1. QREC OPTIONS

Option	Description
FM=	Family name indicating the family of devices to be searched for I/O queue files to process. If specified, processing is restricted to queue files which reside on devices in that family. If omitted, queue files on all devices in all families are processed. Default is all families.
DN=	Two-digit octal logical device number (1 through 77) indicating specific device in family, specified by FM option, to be searched for I/O queue files. If specified, the FM option must be entered and must precede the DN option. If omitted, all devices are searched for queue files to process. Default is all devices.
FU=	Family name indicating the family under which the queue files to be processed were created. Queue files created by users of one family may reside on nonremovable devices of another family. Thus, the FM option specifies the family of devices which will be searched for I/O queue files created by users validated in the family specified by this option. If omitted, queue files created by users in all families are processed. Default is all families.

TABLE 6-1. QREC OPTIONS (Cont'd)

Option	Description								
UI=	<p>User index under which I/O queue files to be processed were created. If this option is specified, only those queue files created by the user having this user index are processed. However, two user indexes may be specified, separated by a hyphen (for example, 75-162). In this case, queue files created by all users having user indexes within this range are processed. This range includes the endpoints. If omitted, queue files created by all users will be processed. Refer to section 2, part IV of the Installation Handbook for a description of user indexes. Default is 0 through 377777B.</p>								
DA=	<p>Processing date, in the form year, month, day (yymmdd). If one date is specified (for example, 750613), only I/O queue files created on that day are processed. If two dates, separated by a hyphen, are specified (for example, 750530-750613), all queue files created within the specified range are processed. This range includes the endpoints. If omitted, queue files created during the past 5 days are processed. Default is current date minus 5 days through current date.</p>								
ID=	<p>Two-digit octal numeric identifier (0 through 77) indicating that only I/O queue files assigned that identifier are processed (refer to Job Processing Control Commands in section 3). If two identifiers are specified, separated by a hyphen, all queue files assigned an identifier within the specified range are processed. This range includes the endpoints. If omitted, queue files having any identifier are processed. Default is 0 through 77.</p>								
JN=	<p>Jobname of I/O queue files to process. Up to five jobnames may be specified. If a jobname has been entered and then is reentered, it is removed from the list. The jobname may be entered in one of two formats, either a seven-character jobname or a four-character banner name. If the banner name (first four characters of the jobname) is entered, all queue files with that banner name are processed. If less than seven characters are entered, the search selects all queue files that have identical jobnames. If this option is omitted, jobnames/banner names are not included in the criteria used to select queue files for processing. Default is no jobname specification.</p>								
L=	<p>Name of file (one to seven characters) to receive QREC disposition output. If omitted, this information is written to file OUTPUT. Default is OUTPUT.</p>								
OP=xx	<p>Processing option indicating function to be performed by QREC. The value specified for xx may be one of the following.</p> <table border="0" data-bbox="406 1549 1364 1843"> <thead> <tr> <th data-bbox="406 1549 454 1579"><u>xx</u></th> <th data-bbox="860 1549 1023 1579"><u>Description</u></th> </tr> </thead> <tbody> <tr> <td data-bbox="406 1587 454 1617">RI</td> <td data-bbox="568 1587 1299 1675">Indicates that selected inactive I/O queue files are activated (requeued) and remaining inactive queue files are ignored.</td> </tr> <tr> <td data-bbox="406 1684 454 1713">RP</td> <td data-bbox="568 1684 1299 1772">Indicates that selected inactive I/O queue files are activated (requeued) and remaining inactive queue files are purged.</td> </tr> <tr> <td data-bbox="406 1780 454 1810">PI</td> <td data-bbox="568 1780 1364 1843">Indicates that selected inactive I/O queue files are purged and remaining inactive queue files are ignored.</td> </tr> </tbody> </table>	<u>xx</u>	<u>Description</u>	RI	Indicates that selected inactive I/O queue files are activated (requeued) and remaining inactive queue files are ignored.	RP	Indicates that selected inactive I/O queue files are activated (requeued) and remaining inactive queue files are purged.	PI	Indicates that selected inactive I/O queue files are purged and remaining inactive queue files are ignored.
<u>xx</u>	<u>Description</u>								
RI	Indicates that selected inactive I/O queue files are activated (requeued) and remaining inactive queue files are ignored.								
RP	Indicates that selected inactive I/O queue files are activated (requeued) and remaining inactive queue files are purged.								
PI	Indicates that selected inactive I/O queue files are purged and remaining inactive queue files are ignored.								

TABLE 6-1. QREC OPTIONS (Cont'd)

Option	Description																						
ot=ft	<p>DI Indicates that selected active I/O queue files are made inactive (entries removed from FNT and added to IQFT file) and remaining active queue files are ignored.</p> <p>If this option is omitted, OP=RI is selected automatically. Default is OP=RI.</p> <p>Selects job origin type (ot) and corresponding file type (ft) to be processed by QREC.</p> <p>The value specified for ot may be one of the following (successive ot entries are allowed).</p> <table data-bbox="438 751 922 898"> <thead> <tr> <th><u>ot</u></th> <th><u>Description</u></th> </tr> </thead> <tbody> <tr> <td>BC</td> <td>Batch</td> </tr> <tr> <td>EI</td> <td>Export/Import</td> </tr> <tr> <td>TX</td> <td>TELEX (time-sharing)</td> </tr> <tr> <td>SY</td> <td>System</td> </tr> </tbody> </table> <p>The value specified for ft may be one of the following.</p> <table data-bbox="438 982 1214 1159"> <thead> <tr> <th><u>ft</u></th> <th><u>Description</u></th> </tr> </thead> <tbody> <tr> <td>IN</td> <td>Input</td> </tr> <tr> <td>PR</td> <td>Print</td> </tr> <tr> <td>PH</td> <td>Punch</td> </tr> <tr> <td>ALL</td> <td>All file types selected for specified origin</td> </tr> <tr> <td>NONE</td> <td>No file types selected for specified origin</td> </tr> </tbody> </table> <p>Initially, all origin types and all file types are selected. Thus, any entry actually clears the automatic selection. For example, BC=PH would indicate that batch origin punch files are not to be processed.</p> <p>Since origin type parameters (ot) may be entered more than once, each successive entry reverses the previously established condition. For example, if BC=PH was specified to inhibit processing of batch origin punch files, a second BC=PH selection would reenable processing of batch origin punch files.</p> <p>If ALL or NONE is specified for ft, processing of all queue file types for the specified origin type is either enabled or disabled, respectively. If all file types are currently enabled for a particular origin type, entering ALL would have no effect. Likewise, entering NONE when all file types for a particular origin type are disabled would have no effect. Default is all origin types and all file types selected.</p>	<u>ot</u>	<u>Description</u>	BC	Batch	EI	Export/Import	TX	TELEX (time-sharing)	SY	System	<u>ft</u>	<u>Description</u>	IN	Input	PR	Print	PH	Punch	ALL	All file types selected for specified origin	NONE	No file types selected for specified origin
<u>ot</u>	<u>Description</u>																						
BC	Batch																						
EI	Export/Import																						
TX	TELEX (time-sharing)																						
SY	System																						
<u>ft</u>	<u>Description</u>																						
IN	Input																						
PR	Print																						
PH	Punch																						
ALL	All file types selected for specified origin																						
NONE	No file types selected for specified origin																						

Several commands are available to aid the operator in the use of this utility and to direct QREC processing. The right screen K display illustrated in Figure 6-3 lists and defines each available command. Information provided on the lower portion of the display describes the entry format for three of the QREC option parameters. To activate the right screen K display, type

KK. (CR)

Table 6-2 describes the function of each command listed in this display.

```

*** QUEUE FILE UTILITY COMMANDS ***

THE FOLLOWING COMMANDS ARE PROVIDED-

GO      - PROCEED WITH PROCESSING {FM MUST BE SPECIFIED}.
        {ALL UTILITIES}
STOP    - TERMINATE INPUT, END RUN. {ALL UTILITIES}
RESET   - RESET PARAMETERS TO DEFAULT VALUES.
        {ALL UTILITIES}
LIST    - DISPLAY JOB NAMES OF INACTIVE QUEUED FILES
        ON RIGHT SCREEN. {QREC, DFTERM ONLY}
+       - PAGE LIST OF JOB NAMES DISPLAYED ON RIGHT SCREEN.
        {QREC ONLY}
CLEAR   - SET RIGHT SCREEN TO THIS DISPLAY. {QREC AND
        DFTERM ONLY}
OUT     - RELEASE FILE SPECIFIED BY L PARAMETER TO
        PRINTER. {QREC AND DFTERM ONLY}

DA, UI, AND ID DIRECTIVES MAY HAVE ONE OF TWO FORMS-

DA=YYMMDD      PROCESS THIS DATE ONLY.
DA=YYMMDD-YYMMDD  PROCESS ALL DATES IN SPECIFIED RANGE.

UI=XXXXXX      PROCESS THIS USER INDEX ONLY.
UI=XXXXXX-YYYYYY  PROCESS ALL INDICES IN SPECIFIED RANGE.

ID=XX          PROCESS THIS ID ONLY.
ID=XX-YY       PROCESS ALL ID'S IN SPECIFIED RANGE.

```

Figure 6-3. QREC/DFTERM K Display Commands

TABLE 6-2. QREC/DFTERM K DISPLAY COMMANDS

Command	Description
GO	Directs active utility to proceed with processing of entered parameters. When processing is complete, the left screen K display is reset to default values.
STOP	Terminates active utility and ends K display interaction.
RESET	Resets all options displayed on the left screen K display to their default values.
LIST	If the QREC utility is active, this command displays a list of inactive I/O queue files on the right screen K display (Figure 6-5). The list of files displayed is also written to the output file specified by the QREC L option. If the DFTERM utility is active, this command displays a list of all permanent dayfiles (Figure 6-8). The list of files displayed is also written to the output file specified by the DFTERM L option.

TABLE 6-2. QREC/DFTERM K DISPLAY COMMANDS (Cont'd)

Command	Description
+	This key is used in conjunction with the LIST command to display succeeding pages (screens) of the information listed and is effective only when used with the QREC utility.
CLEAR	Used in conjunction with the LIST command and returns the right screen K display to the list of processing commands initially displayed (Figure 6-3).
OUT	Disposes output file specified by the QREC or DFTERM L directive to the print queue for immediate printing. Any information that has been or is currently displayed on the right screen K display via the LIST command is also included with the disposed output. In addition, if the LIST command is currently active, the list displayed on the right screen is disposed and the initial right screen K display shown in Figure 6-3 is returned automatically.

5. Enter QREC option parameters in the following format.

K.option₁=value₁,option₂=value₂,...,option_n=value_n (CR)

The option parameter entries are issued to the control point dayfile which is included in the output file specified by the QREC L option (refer to Table 6-1).

If the FM option is included in the parameter string (indicates processing of queue files only for specified family of devices), the original QREC left screen K display (Figure 6-2) is replaced by the secondary QREC display (Figure 6-4).

```

*** QUEUED FILE REQUEUEING ***

INACTIVE QUEUES RESIDE ON FOLLOWING DEVICES IN FAMILY - SYSTEM
01 02

OPTIONS      DESCRIPTION
FM = SYSTEM  FAMILY FOR DEVICES {1-7 CHARACTERS}.
DN = ALL     DEVICE NUMBER {1-77B, ALL}.
FU = ALL     FAMILY FOR USER INDEX {1-7 CHARACTERS}.
UI = 0B      USER INDEX RANGE {0-377777B}.
              377777B
DA = 75/04/09. QUEUED DATE RANGE {YYMMDD}.
              75/04/14.
JN =         JOBNAMES {4 OR 7 CHARACTERS}.
              JOBNAME WILL BE CLEARED IF
              PREVIOUSLY ENTERD.

ID = 0B      ID OF FILES TO PROCESS {0-77B}.
              77B
L = OUTPUT   FILE TO RECEIVE OUTPUT {1-7 CHARACTERS}.
OP = RI      PROCESS OPTION {2 CHARACTERS}.
              RP - SELECTION SPECIFIED FILES, PURGE OTHERS.
              RI - REQUEUE SPECIFIED FILES, IGNORE OTHERS.
              PI - PURGE SPECIFIED FILES, IGNORE OTHERS.
              DI - DEQUEUE SPECIFIED FILES, IGNORE OTHERS.

{OT=FT}     REQUEUE BY ORIGIN TYPE AND FILE TYPE.
              OPTION WILL BE CLEARED IF PREVIOUSLY
              SELECTED. * = OPTION SELECTED.
              OT=ORIGIN TYPE   FT=FILE TYPE
              I P P
              N H R
BC - * * *   BC-BATCH      IN-INPUT
EI - * * *   EI-EXPORT     PH-PUNCH
SY - * * *   SY-SYSTEM     PR-PRINT
TX - * * *   TX-TELEX

```

Figure 6-4. Secondary QREC K Display (FM Option Entered)

This display closely resembles the initial QREC display but restricts QREC processing to the family of devices specified. Each device in the specified family containing inactive queue files is indicated. In addition, other options specified in the parameter string are reflected in this display. Options not specified remain at default values.

If the FM option is not specified in the parameter string entered, the initial QREC K display remains on the left screen. However, the display is modified to reflect the parameter string entered. Again, options not specified remain at the default values.

The displays are modified in this manner to provide an opportunity to double check the entry. If it is necessary to modify the entry, simply reenter those options that are to be changed. Entry of any data other than that specified in Table 6-1 causes an error message to appear at the bottom of the left screen K display. In this case, the portion of the entry up to the point where the error was encountered is processed. The remainder of the entry (from left to right) is ignored.

If it is desired to reset all options to their default value, type

K.RESET (CR)

When this command is processed, the left screen K display returns to its initial state as illustrated in Figure 6-2. Unless a new parameter string is entered, the default value is assumed for each option when QREC processing begins. If it is desired to activate (requeue) all inactive I/O queue files created during the past 5 days, no options need be specified. In this case, all inactive queue files are requeued, providing that sufficient space is available in the FNT to accommodate entries for all inactive files. If sufficient space is not available, only those files for which FNT space exists are requeued.

A complete list of current inactive I/O queue files can be displayed on the right screen by entering the following command.

K.LIST (CR)

When this command is processed, the right screen K display is automatically replaced with the inactive queues K display illustrated in Figure 6-5. The information presented in this display is the same as that provided by the QLIST utility. Note that the list of files displayed is also written to the output file specified by the QREC L option (refer to Table 6-1).

If more inactive queue files exist than can be displayed on one screen (page), succeeding pages can be displayed by entering the following command.

K.+ (CR)

*** INACTIVE QUEUES LIST ***

NO.	FILENAME	FAMILY	DN	FT	OT	DATE	LENGTH {PRUS}
1.	DI80AMB	SYS172	1	PH	SY	75/04/14.	32
2.	AJDIAMM	SYS172	1	PR	BC	75/04/14.	2
3.	AJDIAMN	SYS172	1	PR	BC	75/04/14.	2
4.	AJDIAMO	SYS172	1	PR	BC	75/04/14.	2
5.	AJDIAMP	SYS172	1	PR	BC	75/04/14.	2
6.	AJDIAMV	SYS172	1	PR	BC	75/04/14.	2
7.	AJDIANA	SYS172	1	PR	BC	75/04/14.	2
8.	AJDIANF	SYS172	1	PR	BC	75/04/14.	2
9.	DISOAAO	SYS172	1	PH	BC	75/04/14.	207
10.	AJDIANO	SYS172	2	PR	BC	75/04/14.	2
11.	AJDIAMH	SYS172	2	PR	BC	75/04/14.	2
12.	AJDIAMO	SYS172	2	PR	BC	75/04/14.	2
13.	AJDIAMI	SYS172	2	PR	BC	75/04/14.	2
14.	AJDIAMK	SYS172	2	PR	BC	75/04/14.	2
15.	AJDIAMR	SYS172	2	PR	BC	75/04/14.	2
16.	AJDIAMU	SYS172	2	PR	BC	75/04/14.	2
17.	AJDIAMT	SYS172	2	PR	BC	75/04/14.	2
18.	AJDIAMX	SYS172	2	PR	BC	75/04/14.	2
19.	AJDIAMZ	SYS172	2	PR	BC	75/04/14.	2
20.	AJDIANE	SYS172	2	PR	BC	75/04/14.	2
21.	DI80AAO	SYS172	2	PH	BC	75/04/14.	10
22.	DI80AAO	SYS172	2	PH	BC	75/04/14.	303

END OF DISPLAY.

Figure 6-5. Inactive Queues List K Display

To return to the original right screen K display (Figure 6-3), enter the following command.

K.CLEAR (CR)

- After the desired option parameters, if any, have been entered (step 5), initiate QREC processing by entering the following command

K.GO (CR)

When processing is complete, the left screen K display is reset to default parameters (message QREC COMPLETE appears at bottom of screen), and the right screen returns to the original display.

- After all QREC operations to be performed are complete, enter the following command.

K.STOP (CR)

This command terminates use of the QREC utility and ends K display interaction. An output file is generated indicating the disposition of all I/O queue files processed (Figure 6-6).

*** QUEUE DISPOSITION ***						
NO.	FILENAME	FAMILY	DN	FT	OT	DISPOSITION
				DATE	LENGTH {PRUS}	
1.	AJDIAAU	SYS172	1	PR	EI	75/04/28. 411 IGNORED
2.	AOKQABE	SYS172	1	PR	BC	75/04/28. 127 IGNORED
3.	DIS0AA0	SYS172	1	PR	SY	75/04/28. 5 IGNORED
4.	ABGIACA	SYS172	1	PR	EI	75/04/28. 2 ACTIVATED
5.	ENDAABB	SYS172	2	PR	BC	75/04/28. 127 IGNORED
6.	ABGIACA	SYS172	0	PH	EI	75/04/28. 2 ACTIVATED
7.	AJDIAAU	SYS172	1	PR	EI	75/04/28. 411 IGNORED
8.	AOKQABE	SYS172	1	PR	BC	75/04/28. 127 ACTIVATED
9.	DIS0AA0	SYS172	1	PR	SY	75/04/28. 5 IGNORED
10.	ENDAABB	SYS172	2	PR	BC	75/04/28. 127 IGNORED

Figure 6-6. Format of QREC Output File

It is also possible to call QREC and specify appropriate options without the use of K displays. This is accomplished via a single keyboard entry (under DSD or DIS) in the following format.

X.QREC(option₁=value₁, option₂=value₂, . . . , option_n=value_n, NK)

where:

option_i=value_i

Option parameters described in Table 6-1.

NK

No K display input allowed. The use of the NK parameter and proper parameter selection allows the utility to run without additional operator intervention.

If an error is encountered in this entry, the REQUEST *K* DISPLAY message appears on the DSD B display. The operator may then activate the K display, enter the correct option parameters, and continue as described in the preceding procedure. Note that if errors are encountered and QREC was invoked by a nonsystem origin job (that is, local/remote batch or time-sharing), the message CONTROL CARD ARGUMENT ERROR is issued to the dayfile and QREC processing is terminated.

QLIST (LIST INACTIVE QUEUE FILES)

The QLIST utility generates a printer listing of selected inactive I/O queue files.

The call to QLIST may be accomplished by keyboard entry in the following format (entry is valid under DSD or DIS control).†

X. QLIST(option₁=value₁, option₂=value₂, ..., option_n=value_n)

The selection of inactive queue files to be listed is governed by the option parameters specified. The option parameters are the same as those used for the QREC utility (refer to Table 6-1 under QREC Procedures). All options listed, except QREC processing options (OP=RI, OP=RP, OP=PI, and OP=DI) are valid.

If it is desired to list all current inactive I/O queue files, no options need be specified. In this case, the format of the QLIST call is as follows:

X. QLIST.

The output generated by QLIST is the same as that produced by the LIST command available under the QREC utility (Figure 6-5).

DMQ (DUMP ACTIVE QUEUE FILES)

The DMQ utility searches the FNT and copies all active queue files of the type specified to a selected dump file. All files dumped by DMQ may later be reloaded by the LDQ utility.

The call to DMQ may be accomplished by keyboard entry in the following format (entry is valid under DSD or DIS control).

X. DMQ(FN=lfm, QT=qt, OT=ot, ID=id, JN=jobname, VSN=vsf, NR, ER)

lfm	Name of file (1 to 7 characters) to which queue type files are copied. Default is QDUMP.
qt	Queue type (default is PR) PR Print PH Punch IN Input AL All queue types
ot	Job origin type (default is SY) SY System BC Local batch EI Remote batch (Export/Import)
id	Identifier (00 to 77 octal); default is no id.
jobname	Specific job to be dumped (7 characters). Default is no jobname.

† The QLIST utility may also be invoked by control statement from local or remote batch and time-sharing origin jobs, providing the user is validated for system origin privileges and the system is in DEBUG mode.

vsn Volume serial number of dump tape (1 to 6 characters).
 Ignored if FN is specified.

NR No rewind of file lfn (default is rewind).

ER Files in error are not dumped (default is dump error files).

LDQ (LOAD QUEUE FILES)

The LDQ utility reloads queue type files which have previously been dumped by the DMQ utility.

The call LDQ may be accomplished by keyboard entry in the following format (entry is valid under DSD or DIS control).

X. LDQ(FN=lfm, QT=qt, OT=ot, ID=id, VSN=vsu, NR, ER)

lfm Name of file (1 to 7 characters) from which queue type
 files will be reloaded. Default is QDUMP.

qt Queue type (default is PR)

PR	Print
PH	Punch
IN	Input
AL	All queue types

ot Job origin type (default is SY)

SY	System
BC	Local batch
EI	Remote batch (Export/Import)

id Identifier (00 to 77 octal)

vsu Volume serial number of load tape (1 to 6 characters).
 Ignored if FN is specified.

NR No rewind of file lfn (default is rewind)

ER Files in error remain local.

DFTERM PROCEDURES

The DFTERM utility is used to terminate an active or inactive dayfile and retain it as a direct access permanent file. This utility can also be used to obtain a list of the dayfiles which have been made permanent.

Operation of the DFTERM utility can be accomplished through keyboard entry to a K display (under DSD control only) or by direct keyboard entry under DSD or DIS control. †

The following procedure describes the K display usage for DFTERM operations under DSD control.

1. Call QFSP (queue files supervisor) by typing

X.QFSP. (CR)

† The DFTERM utility can only be invoked from a system origin job (that is, from the system display console).

2. Examine the DSD job status (B) display. When QFSP is scheduled to a control point, it is indicated on the B display. The message

REQUEST*K*DISPLAY

appears in the message field for that control point.

3. Activate the K display for that control point by typing

K,n. (CR) (n is the control point number)

The K display for QFSP (Figure 6-1) appears on the left console screen. Instructions at the bottom of the display describe how to select the utility desired (QREC or DFTERM).

4. Select the DFTERM utility by typing

K.DFTERM (CR)

When this entry is processed, the QFSP display is automatically replaced with the DFTERM left screen K display (Figure 6-7).

It is also possible to call DFTERM directly by substituting the following steps for steps 1 through 3.

- a. Enter X.DFTERM. (CR)

When DFTERM is scheduled to a control point, the message

REQUEST*K*DISPLAY

appears at that control point on the DSD B display.

- b. Enter K,n. (CR) (n is the control point number).

This entry now activates the DFTERM left screen K display (Figure 6-7).

*** DAYFILE TERMINATION ***		
ACTIVE DAYFILES-		
TYPE	FAMILY	DN
DAYFILE	SYSTEM	1B
ACCOUNT	SYSTEM	1B
ERRLOG	SYSTEM	1B
INACTIVE DAYFILES-		
TYPE	FAMILY	DN
OPTIONS		
FT = DAYFILE	DESCRIPTION	
	FILE TYPE TO BE TERMINATED.	
	{DAYFILE, ACCOUNT, ERRLOG}	
FM = SYSTEM	FAMILY FOR NEW DEVICE NUMBER THAT NEW	
	DAYFILE IS TO RESIDE ON {1-7 CHARACTERS}	
DN = 1B	DEVICE NUMBER OF NEW DEVICE {1-77B}.	
	FM AND DN DENOTE RESIDENT DEVICE	
	DAYFILE IS INACTIVE.	
OP = A	ACTIVE OR INACTIVE FILE TO BE TERMINATED	
	{A OR I}.	
NM =	NAME OF PERMANENT FILE. OVERRIDES	
	AUTOMATIC NAMING {1-5 CHARACTERS}.	
L = OUTPUT	FILE TO RECEIVE OUTPUT {1-7 CHARACTERS}.	

The DFTERM K display lists and defines option parameters which may be selected. These options specify the criteria which determine the function to be performed by the DFTERM utility. The value shown for each option in Figure 6-7 is the default value assumed if that option is not selected. Table 6-3 lists each option and provides a detailed description of its use.

Several commands are available to aid the operator in the use of this utility and to direct DFTERM processing. The right screen K display (Figure 6-3) lists and defines each available command. Information provided in the lower portion of the display should be ignored as it pertains only to the QREC utility. To activate the right screen K display, type

KK. (CR)

Detailed information concerning use of each command shown on the right screen K display is contained in Table 6-2.

TABLE 6-3. DFTERM OPTIONS

Option	Description
FT=	<p>Type of dayfile to be terminated. One of the following types may be specified</p> <ul style="list-style-type: none"> • DAYFILE System dayfile • ACCOUNT Account dayfile • ERRLOG Error log dayfile <p>This entry also causes the FM and DN options to be updated to reflect the current family and device number of the dayfile specified by FT. If the FT option is omitted, the system dayfile (DAYFILE) is assumed. Default is DAYFILE.</p>
FM=	<p>Family name. This parameter has two functions. If an inactive dayfile is to be terminated (specified by OP option), this parameter defines the family of devices on which the new dayfile will reside. If omitted when terminating an active dayfile, the new dayfile will reside in the same family as the dayfile being terminated. Default is family on which current system dayfile resides.</p>
DN=	<p>Device number indicating specific device on which inactive dayfile resides, or device on which the new dayfile will reside if the active dayfile is terminated. Default is device on which current system dayfile resides.</p>
NM=	<p>Name of direct access permanent file on which terminated dayfile is written. Normally, the permanent file name is supplied automatically by DFTERM. In this case, the file name generated consists of the following.</p> <ul style="list-style-type: none"> • The first two characters indicate the type of dayfile being terminated (DF, AC, or ER). • The next character is a sequence number (A through 9). • The next two characters represent the month. • The final two characters represent the day of the month.

TABLE 6-3. DFTERM OPTIONS (Cont'd)

Option	Description						
	<p>However, automatic naming can be overridden by specifying a 1- to 5-character file name. If this is done, DFTERM automatically adds a 2-character prefix indicating the type of dayfile being terminated (DF, AC, or ER). Default is file name generated by DFTERM.</p>						
L=	<p>Name of file (1 to 7 characters) to receive DFTERM output. If omitted, this information is written to file OUTPUT. Default is OUTPUT.</p>						
OP=x	<p>Processing option indicating function to be performed by DFTERM. The value specified for x may be one of the following.</p> <table border="0" data-bbox="396 688 954 785"> <thead> <tr> <th data-bbox="456 688 480 716"><u>x</u></th> <th data-bbox="672 688 834 716"><u>Description</u></th> </tr> </thead> <tbody> <tr> <td data-bbox="456 726 472 747">A</td> <td data-bbox="581 726 927 753">Terminate active dayfile</td> </tr> <tr> <td data-bbox="456 758 472 779">I</td> <td data-bbox="581 758 951 785">Terminate inactive dayfile</td> </tr> </tbody> </table> <p>Default is OP=A.</p>	<u>x</u>	<u>Description</u>	A	Terminate active dayfile	I	Terminate inactive dayfile
<u>x</u>	<u>Description</u>						
A	Terminate active dayfile						
I	Terminate inactive dayfile						

5. Enter DFTERM parameters in the following format.

K.option₁=value₁, option₂=value₂, ..., option_n=value_n (CR)

When this entry is processed, the left screen K display is modified to reflect the entered parameters. Options not specified remain at default values. The display is modified in this manner to provide an opportunity to double check the entry. If it is necessary to modify the entry, simply reenter those options that are to be changed. Note that entry of any data other than that specified in Table 6-3 causes an error message to appear at the bottom of the left screen K display. In this case the portion of the entry up to the point where the error was encountered is processed. The remainder of the entry (from left to right) is ignored.

If it is desired to reset all options to their default value, type

K.RESET (CR)

When this command is processed, the left screen K display returns to its initial state as illustrated in Figure 6-7. Unless a new parameter string is entered, the default value is assumed for each option when DFTERM processing begins.

6. After the desired option parameters, if any, have been entered (step 5), initiate DFTERM processing by entering the following command

K.GO (CR)

When processing is complete, the left screen K display is reset to default parameters (message indicating the name of permanent file containing terminated dayfile appears at bottom of screen), and the right screen returns to the original display.

A list of the permanent dayfiles can be displayed on the right screen K display by entering the following command.

K.LIST (CR)

When this command is processed, the right screen K display is automatically replaced with the dayfile list K display illustrated in Figure 6-8. The information presented in this display is the same as that provided by the DFLIST utility.

*** PERMANENT DAYFILE CATALOG ***							
NO.	TYPE	FM/PN	DN	PFNAME	DATE	TIME	LENGTH
1.	DAYFILE SYSTEM	01	DFA0414	75/04/14	10.36.31	5	
2.	DAYFILE SYSTEM	01	DFB0414	75/04/14	10.43.28	7	
3.	DAYFILE SYSTEM	01	DFC0414	75/04/14	10.43.20	1	
4.	ACCOUNT SYSTEM	01	ACA0414	75/04/14	10.43.37	11	

Figure 6-8. Dayfile List K Display

If there are more files than can be displayed on one screen (page), a message appears at the bottom of the screen indicating that more files exist. Note that when the LIST command is entered, a complete list of permanent dayfiles is written to the output file specified by the DFTERM L option (refer to Table 6-3). Thus, a complete printer listing is provided when the DFTERM utility is terminated. Should it be necessary to obtain the output listing immediately, enter the following command.

K.OUT (CR)

When this command is processed, the initial right screen K display (list of QREC/DFTERM commands) is automatically returned. However, if the OUT command is not entered, the original right screen K display can be returned by entering the following command.

K.CLEAR (CR)

7. After all DFTERM operations to be performed are complete, enter the following command.

K.STOP (CR)

This command terminates use of the DFTERM utility and ends K display interaction. If the LIST command was entered at any time during DFTERM operations, an output file indicating the results of DFTERM processing is also generated. The format is essentially the same as that illustrated in Figure 6-8. Note that unless the LIST command was entered, no output file is generated.

It is also possible to call DFTERM and specify appropriate options without the use of K displays. This is accomplished via a single keyboard entry (under DSD or DIS control) in the following format:

X. DFTERM(option₁=value₁, option₂=value₂, . . . , option_n=value_n, NK)

option₁=value₁

Option parameters described in Table 6-3.

NK

No K display input allowed. The use of the NK parameter and proper parameter selection allows the utility to run without additional operator intervention.

If an error is encountered in this entry, the REQUEST *K* DISPLAY message appears on the DSD B display. The operator may then activate the K display, enter the correct option parameters, and continue as described in the preceding procedure.

DFLIST (LIST PERMANENT DAYFILES)

The DFLIST utility generates a printer listing of all permanent files created by the DFTERM utility.

The call to DFLIST may be accomplished by keyboard entry in the following format (entry is valid under DSD or DIS control).†

X. DFLIST.

The output generated by DFLIST is the same as that produced by the LIST command available under the DFTERM utility (Figure 6-8).

† The DFLIST utility can only be invoked from a system origin job (that is, from the system display console).

This section describes the operation of the STAGE and FLAW system utility programs.

STAGE (STAGE TAPE FILES TO DISK)

STAGE is used to copy tape files onto a mass storage device and make the file a locked common file.

Staging may be accomplished through keyboard entry to the K display (under DSD control only), or by direct keyboard entry under DSD or DIS control. Direct keyboard entry is in the following format.

X. STAGE(lfn, T=xx, NR, NU, N=n, DR, VSN=vsn, F=format, D=den, tt)

lfn	Name of mass storage file to which tape file is copied								
xx	EST ordinal of magnetic tape unit to be used. This parameter is specified only when tape containing file to be copied is unlabeled (X format and default density).								
NR	No rewind before copy takes place (default is rewind)								
NU	No unload after copy (default is automatic unload)								
n	Number of files to copy								
DR	Drop job after copy								
vsn	Volume serial number (1 to 6 characters) of labeled tape to be copied								
format	Format of data on tape file to be copied. Only binary mode formats I (internal), SI (SCOPE internal), and X (external) are supported.								
den	Tape density: <table border="0" style="margin-left: 20px;"> <tr> <td>200</td> <td>200 bpi (implies 7-track)</td> </tr> <tr> <td>556</td> <td>556 bpi (implies 7-track)</td> </tr> <tr> <td>800</td> <td>800 bpi/cpi (7- or 9-track)</td> </tr> <tr> <td>1600</td> <td>1600 cpi (implies 9-track)</td> </tr> </table>	200	200 bpi (implies 7-track)	556	556 bpi (implies 7-track)	800	800 bpi/cpi (7- or 9-track)	1600	1600 cpi (implies 9-track)
200	200 bpi (implies 7-track)								
556	556 bpi (implies 7-track)								
800	800 bpi/cpi (7- or 9-track)								
1600	1600 cpi (implies 9-track)								
tt	Track type: <table border="0" style="margin-left: 20px;"> <tr> <td>MT</td> <td>7-track tape (default)</td> </tr> <tr> <td>NT</td> <td>9-track tape</td> </tr> </table>	MT	7-track tape (default)	NT	9-track tape				
MT	7-track tape (default)								
NT	9-track tape								

If neither T nor VSN parameter is specified, a flashing REQUEST message for file lfn appears on the B display and the operator must assign tape unit to control point indicated. If a common file already exists with the same name as specified by lfn, the system issues the following message.

DUPLICATE COMMON FILE NAME.

If staging is done using the K display (Figure 7-1), enter X.STAGE. and then enter K,n. where n is the control point requesting the K display. To enter options via the K display, type K. and the desired options followed by a period. Only one line of parameters may be entered; therefore, all desired options must be entered at once, separated by commas.

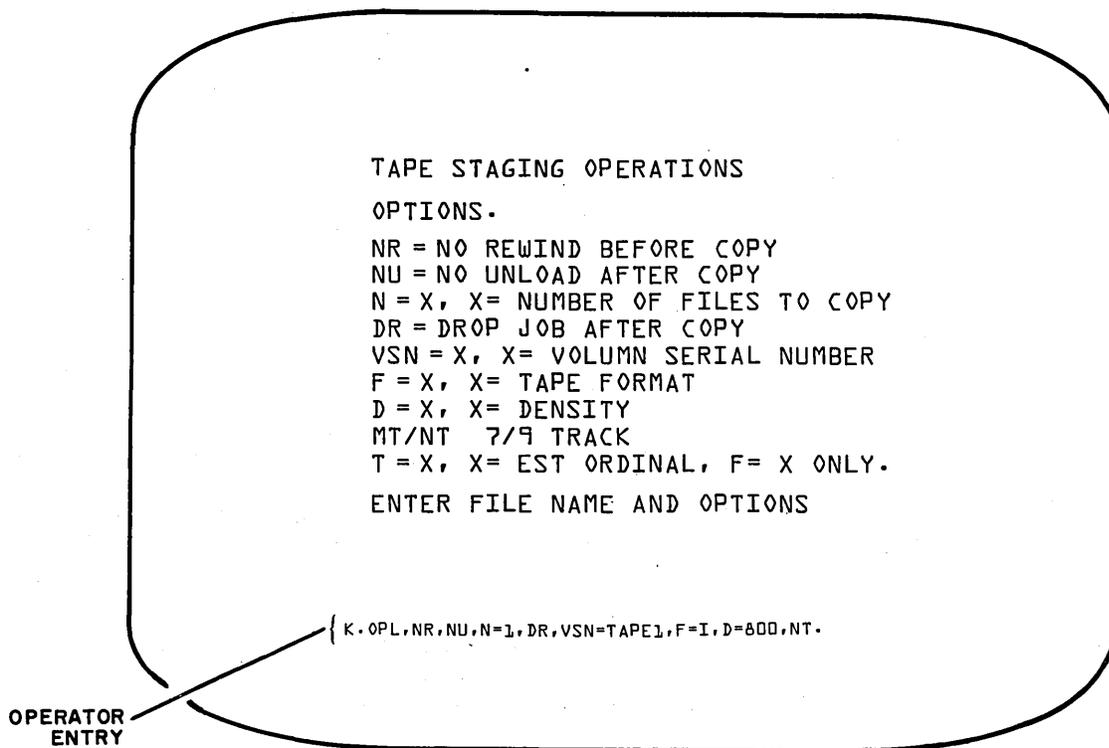


Figure 7-1. STAGE Utility K Display

FLAW (RESERVE TRACKS)

The FLAW utility provides the capability to reserve tracks on any mass storage device during normal system operation. Each entry identifies an area of mass storage that is unusable (flawed area) and prevents the system from accessing it. Since the 881 disk pack normally contains flaw information in the utility sector, the FLAW utility should be used on an 881 only to specify additional areas not currently in the utility sector. Obtain flaw addresses from the customer engineer or the system analyst.

FLAWing tracks on mass storage devices is accomplished using the K display (Figure 7-2). Note that all console entry is performed under DSD control. The sequence is as follows:

1. Call FLAW utility by typing
X.FLAW. (CR)
2. Bring K display to left console screen by typing
K,n. (CR)
where n is the control point number requesting the K display (message REQUEST*K*DISPLAY appears at control point n on B display).
3. Specify mass storage device on which tracks are to be flawed. Enter
K.EQ=xx. (CR)
where xx is the EST ordinal of the mass storage device.
4. Enter flaws. A maximum of 20 octal flaw entries is allowed for each call to the FLAW utility. In addition, there are three types of flaw entries that may be specified. The general format for K display entry is

K.xTK=ta. (CR)

where:

xTK	Specifies type of flaw entry.
RTK	Converts input physical address to a logical address and sets track reservation table (TRT) to indicate that track is a reserved, flawed track.
TTK	Input is the same as RTK but track reservation is toggled. That is, if the track was previously not reserved, this entry produces the same results as RTK. If the track was previously reserved as a flawed track, that reservation is removed.
STK	Performs the same function as RTK except that input address is a logical address (no conversion required).
ta	Specifies track address according to equipment format.

Axxxxxx	Block (track) address/10 ₈ for ECS (DE)
Cxxx, Txx, Sxx	Track address for 844 Disk Storage Subsystem (DI)
Cxxx.Sxxxx	Track address for 841 Multiple Disk Drive (MD)

Legend: xxx is octal number of address (A), cylinder (C), track (T), or sector (S).

```

MMM MASS STORAGE DEVICE INITIALIZATION MMM
CURRENT INITIALIZATION OPTIONS

OPTION VALUE  DESCRIPTION
FM = 0        FAMILY NAME/ PACK NAME
              FM = PACK NAME FOR TYPE *X
UN = 0        USER NUMBER
TY = 0        ACCESS TYPE
DM = 0        DEVICE MASK
SM = 0        SECONDARY MASK
NC = 0        CATALOG TRACKS
EQ = 0        EST ORDINAL OF DEVICE
NP = 0        NUMBER OF PACKS
DN = 1        DEVICE NUMBER

SET FLAWS

RTK, STK AND TTK ENTRIES, ENTER SINGLY
GENERAL FORMAT - XTK=A.
WHERE, *XTK* IS-
RTK = RESERVE TRACK
TTK = TOGGLE TRACK
STK = SET LOGICAL TRACK
AND *AM* = EQUIPMENT FORMAT-
DA - T000,G0,S000
DB - P00,H00,S000
DC - U0,G00,A00000
DD - C000,S000
DE - A000000 = ADDR/10B
DF - C000,S0000
DH - C000,S0000
DI - C000,T00,S00
MD - C000,S0000
LIMIT = 208 ENTRIES

```

Figure 7-2. FLAW Utility K Display

- Initiate flawing of specified device by typing

K. GO. (CR)

The FLAW utility provides two messages in the system dayfile which indicate the results of the flawing operation. The first message is

xx TRACKS FLAWED.

where xx is the octal number of tracks that were successfully flawed. The second message appears only if some of the flaws specified were not processed. This occurs when the track specified for flawing is already reserved by the system (but not as a flawed track). In this case, the message

xx FLAWS NOT PROCESSED,
list.

also appears in the system dayfile. In this message, xx is the octal number of flaws not processed, and list is a list of the logical tracks that were not flawed.

The entries described here are similar to those entered in CMRDECK for flawing a device at deadstart time. However, the flaw entries specified via the FLAW utility or DSD command INITIALIZE (refer to section 3) are not recovered if the device is initialized at deadstart time. Only the flaw entries specified in CMRDECK will be recovered. If a device is initialized during normal system operation (INITIALIZE command), all flaws specified in devices TRT, including those entered via FLAW utility or INITIALIZE command, will be recovered providing device has a good label at time of initialization. If label is bad, or cannot be recognized, all current flaws are cleared.

OPERATION UNDER DIS CONTROL

8

DIS, similar to DSD, displays information of a single job assigned to a control point. Under DIS, the B display shows the exchange package area for the job. Central memory addresses relative to the job's reference address are used for the data and program displays.

DIS is brought to a control point to monitor the progress of a job by any of the following methods.

- Control statement in the form DIS
- Operator call to DIS by typing n.DIS. for the job active at control point n
- Operator call to DIS by typing X.DIS,f1. (f1=field length desired) or X.DIS. (field length of 60,000 octal assumed by default). This brings DIS to an empty control point to initiate utility programs.

When DIS is controlling the console, the * key is used to alternate the display between DSD and DIS. DIS permanently returns control to DSD when DROP. is typed; the job is not dropped unless no control statements remain.

When DIS is called to a control point, automatic control statement processing stops and the A and B displays for DIS appear on the left and right display screens, respectively. Keyboard entry is necessary to begin processing of subsequent control statements. Unless automatic control statement processing is reenabled, the job is stopped after each control statement is processed. That is, only one control statement can be processed at a time. Under DIS, the B display shows only the condition of the control point to which it is assigned, including upcoming control statements. When the job is not using the central processor, a copy of its exchange package is displayed. Displays available under DIS are selected in the same manner as DSD displays. The PRESENTATION CONTROL switch on the CDC CYBER 170 Series console enables the operator to display a left screen display only (switch in LEFT position), a right screen display only (switch in RIGHT position), or both left and right displays on a split screen (switch in MAINTENANCE position). Refer to section 3 for further information on the PRESENTATION CONTROL switch and Console Operations in this section for information concerning display selection commands and DIS keyboard entries.

The displays available under DIS are:

<u>Display</u>	<u>Description</u>
A	Dayfile messages and files attached to the control point
B	Job status, control statements, and the exchange package
C, D	Data storage: contents of 32 central memory words (four selectable 8-word groups) in five columns of four octal digits with display code equivalents (same as DSD C and D displays)
E	Data storage: contents of 32 central memory words (four selectable 8-word groups) in four columns of five octal digits with display code equivalents
F, G	Program storage: contents of 32 central memory words (four selectable 8-word groups) in four columns of five octal digits with COMPASS mnemonic equivalents
H	Control point file name table: all files assigned to control point as well as equipment assigned to files
J	Job display (same as the DSD B display)
K	Equipment status table (same as the DSD E display)
L	System file name table (same as DSD H display)
M	Magnetic tape status (same as the DSD E, T. display; status field is absent)
N	Blank screen
P	PP registers (same as the DSD P display)
Q	Input/output/rollout queues (same as the DSD Q display)
T, U	Text display; displays text from central memory in coded lines (up to 60 characters per line). The T display terminates after 240 words have been displayed; the U display terminates after 300 words have been displayed.
V	Central memory buffer; displays directly from central memory. The display terminates after 512 words have been displayed.
Y	Monitor functions; displays mnemonics and the values of all monitor functions (same as the DSD Y display)
Z	Directory of DIS displays available

NOTE

Although all displays listed may appear on the left screen, only the B, C, D, N, T, and U displays may appear on the right screen. If the operator attempts to bring any other display to the right screen, the message ILLEGAL CONTROL CARD is issued.

DIS DAYFILE (A) DISPLAY

Figure 8-1 illustrates the DIS dayfile display. The figure shows the dayfile messages for the control point to which DIS is currently assigned and as many files attached to that control point as will fit in the display. Note that all files attached to the control point may be observed via the file name table (H) display. The header information illustrated in Figure 8-1 appears on all left screen DIS displays.

APPEARS ON ALL LEFT
SCREEN DIS DISPLAYS

```
DIS      A

19.56.29. 75/06/23. CDC MULTI-MODE OPERATING SYSTEM. } HEADER APPEARS
USER = DFTEANZ. USER INDEX = 41. } ON ALL LEFT
                                  } SCREEN DISPLAYS

DAYFILE

18.17.22.DIS.
18.17.22.MODE{0}
18.17.22.RETURN{INPUT}
18.17.22.DIS.
18.21.28.SUI.41.
18.21.36.GET.PRPFU.
18.21.52.DISPLAY.13.
18.21.52.
18.21.52.UNMATCHED PARENTHESES.
18.25.19.WRITEF.STWFILE.
18.25.31.USER=DFTEANZ.

NUMBER FILE  TY  EQ  ID  STATUS
    7. INPUT* .IN* 0. 0. 6605.
   13. PRPFU  .LO. 1. 0. 5.
   22. STWFILE.LO. 0. 0. 307. }
```

DAYFILE
MESSAGES

FILES ATTACHED TO
THE CONTROL POINT

Figure 8-1. DIS Dayfile (A) Display

DIS JOB STATUS (B) DISPLAY

Figure 8-2 illustrates the DIS job status display. The figure shows the job status, current message buffer, job control statements, and exchange package. The job status is a two-line entry in which the first line identifies the control point to which the job is assigned (11), the job name (DISOAXJS), CPU priority (30), queue priority (7760), time limit (777777), accumulated CPU time (0 seconds), and the CPU status. The second line of job status contains the central memory reference address (RA=242100), the job's field length (4300), and assigned equipment (10 - the display console).

Although this figure shows the B display on the right console screen, it may also be displayed on the left screen. The header information illustrated in Figure 8-2 appears on all right screen displays. In addition, at the bottom of the right screen, each PPU is represented by an entry for the program currently running and the control point to which the program is assigned (PPU status information in figure). PPU 0 and PPU 1 are dedicated for monitor (MTR) and DSD, respectively. The header and PPU status information for DIS right screen displays is identical to that displayed for DSD right screen displays (refer to description of DSD B display in section 4 for complete information).

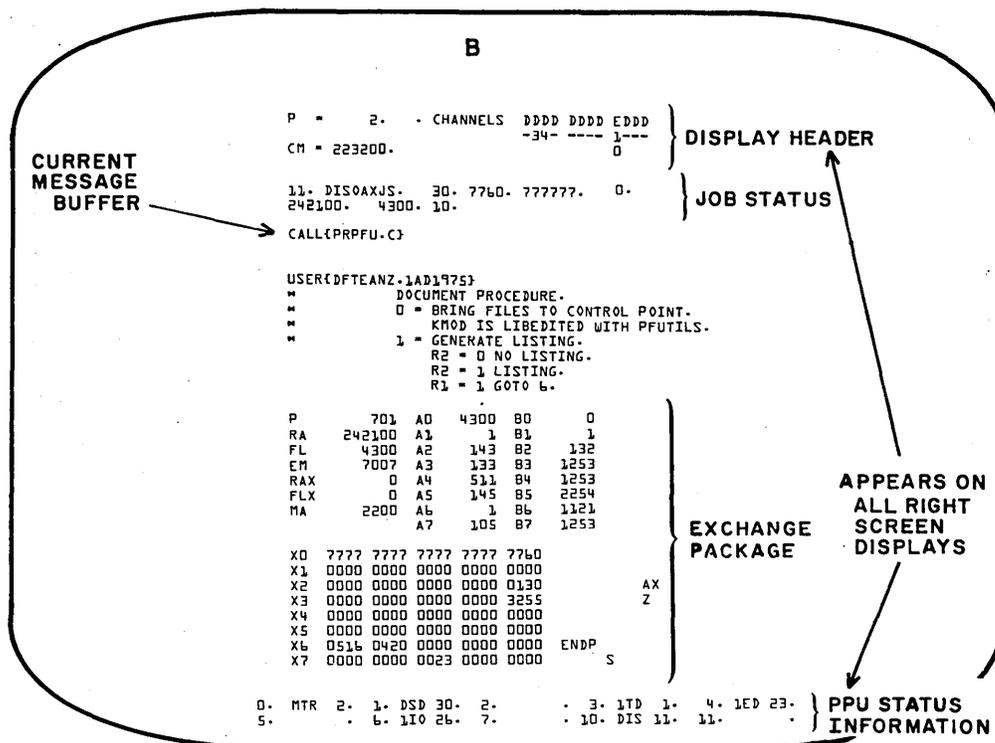


Figure 8-2. DIS Job Status (B) Display

DIS MEMORY DISPLAYS

Figure 8-3 illustrates the DIS data storage (E) display. The contents of each central memory word is displayed in four columns of five octal digits along with the display code equivalent. Refer to Figure 4-3 in section 4 for an illustration of the DSD C/D displays (same as DIS C/D displays).

DIS	E				
17-05-26. 75/06/23. CDC MULTI-MODE OPERATING SYSTEM					
USER =	. USER INDEX =				D.
000100	00000	00000	00000	00000	
000101	03171	51505	16240	00226	COMMENT BV
000102	15170	40500	00000	00117	MODE A0
000103	16170	53011	24000	00126	NOEXIT AV
000104	17160	53011	24000	00133	ONEXIT A0
000105	17162	32700	00000	00134	ONSW AL
000106	17060	62327	00000	00156	OFFSW A.
000107	22061	40000	00000	00157	RFL A.
000110	22171	41417	25240	00166	ROLLOUT A
000111	23052	42022	00000	00171	SETPR A
000112	23052	42414	00000	00200	SETTL A
000113	23251	10000	00000	00210	SUI BH
000114	23271	12403	10000	00134	SWITCH AL
000115	25230	50320	25000	00217	USECPU B0
000116	22061	45400	00000	00314	RFL= CL
000117	51200	00064	61100	00001	{P H A
000120	73720	66700	51500	00002	F {/ B
000121	03070	00230	01000	00252	CG BXA B}
000122	03140	00230	72767	77767	CL BX
000123	51000	00000	01230	00024	{ AS T
000124	02132	32000	00000	00175	BKSP A
000125	03171	51517	16000	00202	COMMON BB
000126	04112	32017	23050	00227	DISPOSE BW
000127	05261	10324	00000	00352	EVICT C}
000130	14170	31300	00000	00357	LOCK C-
000131	17252	40000	00000	00364	OUT C
000132	22051	40501	23050	00371	RELEASE C
000133	22051	60115	05000	00406	RENAME DF
000134	22052	71116	04000	00425	REWIND DS
000135	22052	42522	16000	00416	RETURN DN
000136	23131	12005	11000	00444	SKIPPI D9
000137	23131	12006	00000	00451	SKIPPI D1

Figure 8-3. DIS Data Storage (E) Display

Figure 8-4 illustrates the DIS program storage (F) display. The F and G displays show the contents of central memory and the COMPASS mnemonic translation.

DIS		F	
17-05-26. 75/06/23. CDC MULTI-MODE OPERATING SYSTEM.			
USER =		USER INDEX = 0.	
000100	00000 00000 00000 00000	PS	PS
000101	03171 51505 16240 00226	NZ X	BXX+-X PS
000102	15170 40500 00000 00117	BXX-X FXX-X	PS
000103	16170 53011 24000 00126	BXX+-X SAX+B	NX XB PS
000104	17160 53011 24000 00133	BXX-X SAX+B	NX XB PS
000105	17162 32700 00000 00134	BXX-X DXX+X	PS
000106	17060 62327 00000 00156	BXX-X SBX+K	PS
000107	22061 40000 00000 00157	LX XB FXX-X	PS
000110	22171 41417 25240 00166	LX XB RXX-X	ZX XB PS
000111	23052 42022 00000 00171	AX XB DXX-X	PS
000112	23052 42414 00000 00200	AX XB DXX-X	PS
000113	23251 10000 00000 00210	AX XB BX X	PS
000114	23271 12403 10000 00134	AX XB BXX+X	BX X PS
000115	25230 50320 25000 00217	ZX XB SAA+K	PS
000116	22061 45400 00000 00314	LX XB RXX/X	PS
000117	51200 00064 61100 00001	SAB+K	SBB+K
000120	73720 66700 51500 00002	SXX+B	SBB+B SAB+K
000121	03070 00230 01000 00252	ZR X	RJ/RWE
000122	03140 00230 72767 77767	NZ X	SXX+K
000123	51000 00000 01230 00024	SAB+K	RJ/RWE
000124	02132 32000 00000 00175	JPB+K	PS
000125	03171 51517 16000 00202	NZ X	BXX+-X PS
000126	04112 32017 23050 00227	E0 88	AX XB PS
000127	05261 10324 00000 00352	NE 88	PS
000130	14170 31300 00000 00357	BX -X FXX-X	PS
000131	17252 40000 00000 00364	BXX-X FXX-X	PS
000132	22051 40501 23050 00371	LX XB FXX-X	AX XB PS
000133	22051 60115 05000 00406	LX XB SBA+K	PS
000134	22052 71116 04000 00423	LX XB SXX+K	PS
000135	22052 42522 16000 00416	LX XB DXX-X	BXX+-X PS
000136	23131 12005 11000 00444	AX XB BXX-X	BXX-X PS
000137	23131 12006 00000 00451	AX XB BXX-X	PS
ADDRESS	MEMORY CONTENTS	COMPASS MNEMONIC TRANSLATION	

Figure 8-4. DIS Program Storage (F) Display

DIS DIRECTORY (Z) DISPLAY

Figure 8-5 illustrates the DIS directory display. The Z display lists all displays available under DIS control. If the letter entered to select the left screen display is not a valid display identifier (for example, I, M, O, R, S, W, or X), the Z display is selected automatically.

```
DIS          Z

19.56.29. 75/06/23. CDC MULTI-MODE OPERATING SYSTEM.
USER = DFTEANZ. USER INDEX = 41.

DIRECTORY.

A DAYFILE MESSAGES.
B SYSTEM STATUS.
C CENTRAL MEMORY, 5 GROUPS OF 4.
D CENTRAL MEMORY, 5 GROUPS OF 4.
E CENTRAL MEMORY, 4 GROUPS OF 5.
F CENTRAL MEMORY, 4 GROUPS OF 5.
G CENTRAL MEMORY, 4 GROUPS OF 5.
H FILE NAME TABLE.
J JOB DISPLAY.
K EQUIPMENT STATUS TABLE.
L SYSTEM FILE NAME TABLE.
M MAGNETIC TAPE STATUS.
N BLANK SCREEN.
P PP REGISTERS.
Q INPUT/OUTPUT/ROLL OUT QUEUES.
T TEXT DISPLAY.
U TEXT DISPLAY.
V CENTRAL MEMORY BUFFER.
Y MONITOR FUNCTIONS.
Z ALL OTHERS - THIS DISPLAY.
```

Figure 8-5. DIS Directory (Z) Display

CONSOLE OPERATION

Unlike DSD, DIS is not interpretive. The operator must complete every type-in and signal DIS to act upon the message by pressing the carriage return key. The following rules apply to all DIS commands.

- Spaces in an octal field are ignored, but may be inserted for readability.
- All octal fields are assembled right-justified with leading zero fill; excess octal digits are ignored.

In addition to the command entries, the following keys have special meaning to DIS when entered as the first character.

<u>Key</u>	<u>Action Initiated</u>
*	If DSD has relinquished the main display console to DIS, * acts as a quick hold, and DIS drops the display channel so that DSD can use it.
=	Alternately selects relative or absolute mode for memory references made from the console keyboard (mode changes each time = key is pressed). There is no visual indication when relative mode is selected, and memory locations shown in the C, D, E, F, and G memory displays are relative to the reference address (RA) for the control point to which DIS is assigned. When absolute mode is in effect, the letters ABS appear at the top of the left screen next to the display identifier, and memory displays C, D, E, F, and G show absolute locations.



Central memory changes made while in absolute mode are placed in absolute core addresses.

For example, 100,1,4000. is entered into core at RA+100 in relative mode and at central memory address 100 in absolute mode.

+	Advances the left screen memory display address by 40 octal locations (applicable only to memory displays C, D, E, F, or G)
-	Decrements the left screen memory display address by 40 octal locations (applicable only to memory displays C, D, E, F, or G)
(Breakpoint program to (P+1)
)	Breakpoint program to (P-1)
/	Advances left screen memory display address by the value in the lower 18 bits of the first word displayed (applicable only to memory displays C, D, E, F, or G)
.	Sets AUTO MODE (initiates automatic control statement processing). This key performs the same function as the RCS command described under DIS Keyboard Entries in this section.
8	Advances the pointer indicating the first address of managed tables for the left screen.

<u>Key</u>	<u>Action Initiated</u>
9	Decrements the pointer indicating the first address of managed tables for the left screen
right blank (display key)	Advances the left screen display sequence established by the SET, ssss...s. command (refer to Display Selection Commands)
CR (carriage return)	Sets the repeat entry flag; message REPEAT ENTRY is displayed on the error message line of the left screen. The subsequent command entry is processed but is not erased after completion. That command is processed each time the carriage return key is pressed. To clear the repeat entry mode, press the left blank (erase) key.

The following keys are interpreted as control characters by DIS.

<u>Key</u>	<u>Action Initiated</u>
left blank (erase)	Clears current DIS keyboard entry and any resultant error message; AUTO MODE (automatic control statement processing) is also cleared
BKSP (backspace)	Deletes last character displayed and clears error message (if one exists)
CR (carriage return)	Initiates processing of an entered command

The following keyboard messages may appear above the type-in.

<u>Message</u>	<u>Meaning</u>
ILLEGAL ENTRY.	Command cannot be processed.
REPEAT ENTRY.	Command in control statement buffer is repeated each time carriage return is pressed; cleared by left blank key.
OUT OF RANGE.	Memory entry address is greater than the field length.
SYSTEM BUSY - DISK.	DIS is waiting for an overlay to be loaded from a mass storage device.
SYSTEM BUSY - PPU.	DIS is waiting for a PPU to be assigned in order to process a keyboard entry.
JOB ACTIVE.	Previous request not completed; command must be reentered when job is not active.
AUTO MODE.	Control statement buffer is read automatically. Automatic control statement processing can be selected by the RCS command or by pressing the . key.
DIRECT CPU INPUT.	N. command has been entered and all data entered from the keyboard is being passed directly to central memory.

DISPLAY SELECTION COMMANDS

The operator indicates the displays to be shown on the left and right screens on the console by the following commands. A carriage return should follow the type-in.

<u>Command</u>	<u>Action Initiated</u>												
xy.	Brings the x and y displays to the left and right screens, respectively. Note that although all DIS displays may appear on the left console screen, only the B, C, D, N, T, and U displays may appear on the right screen. If the operator attempts to bring any other display to the right screen, the message ILLEGAL CONTROL CARD is issued. In addition, if the letter entered to select the left screen display (x) is not a valid display identifier, the Z display is selected automatically.												
xz, aaaaaa.	Brings specified memory display to the left screen, if not currently selected, and provides display modifications as follows: <table border="0" style="margin-left: 40px;"> <tr> <td>x</td> <td>Display identifier (C, D, E, F, or G)</td> </tr> <tr> <td>z</td> <td>Type of display modifications:</td> </tr> <tr> <td>z=0-3</td> <td>Changes the specified group to display the eight words beginning at location aaaaaa</td> </tr> <tr> <td>z=4</td> <td>Changes the entire display so that all four 8-word groups are 32 contiguous locations beginning at location aaaaaa</td> </tr> <tr> <td>z=5</td> <td>Advances the display by aaaaaa locations</td> </tr> <tr> <td>z=6</td> <td>Decrements the display by aaaaaa locations</td> </tr> </table> <p style="margin-left: 80px;">aaaaaa Location parameter</p>	x	Display identifier (C, D, E, F, or G)	z	Type of display modifications:	z=0-3	Changes the specified group to display the eight words beginning at location aaaaaa	z=4	Changes the entire display so that all four 8-word groups are 32 contiguous locations beginning at location aaaaaa	z=5	Advances the display by aaaaaa locations	z=6	Decrements the display by aaaaaa locations
x	Display identifier (C, D, E, F, or G)												
z	Type of display modifications:												
z=0-3	Changes the specified group to display the eight words beginning at location aaaaaa												
z=4	Changes the entire display so that all four 8-word groups are 32 contiguous locations beginning at location aaaaaa												
z=5	Advances the display by aaaaaa locations												
z=6	Decrements the display by aaaaaa locations												
x, nnnn.	If x specifies one of the memory displays (C, D, E, F, or G), nnnn is the bias address for the managed table display.												
SET, ssss...s.	Sets the left screen display sequence; ssss...s consists of one to eight display identifiers. Pressing the right blank (display) key after this command is entered causes the first display to appear on the left console screen. Pressing the key again selects the second display. The next display in the specified sequence appears on the left screen each time the right blank key is pressed, for example, SET, ACEDH.												

DIS KEYBOARD ENTRIES

If a job is currently active (CPU active, waiting, on recall, or PPU active), many commands are not accepted; JOB ACTIVE is displayed.

<u>Command</u>	<u>Action Initiated</u>
BKPA, xxxxxx.	Breakpoint to address xxxxxx in the program with assigned PPUs. Central processor execution begins at the current value of P and stops when P = xxxxxx. PPUs attached to the control point may still be active. DIS clears xxxxxx to stop the program at that point. The breakpoint may be cleared by setting the breakpoint address to a new value.

<u>Command</u>	<u>Action Initiated</u>
BKP, xxxxxx.	Breakpoint to address xxxxxx in the program. Central processor execution begins at current value of P and stops when P=xxxxxx, and DIS is the only PPU active at the control point.
DCP.	Drops the central processor and displays the exchange package area on the B display
DIS.	Reloads main DIS overlay
DROP.	Drops DIS, but normal processing of the job continues (it does not drop the job unless no activity remains or the error flag is set)
ELS, ccc...ccc.	Allows entry of control statement ccc...ccc after the last statement in the control statement buffer, if there is space
ENAi, xxxxxx.	Sets register Ai=xxxxxx in the exchange package area
ENBi, xxxxxx.	Sets register Bi=xxxxxx in the exchange package area
ENEM, n00m.	Sets CPU hardware exit mode to n ($0 \leq n \leq 7$) Sets CPU program exit mode to m ($0 \leq m \leq 7$)
ENFL, xxxxxx.	Sets FL=xxxxxx in the exchange package area (storage is moved if necessary)
ENP, xxxxxx.	Sets P=xxxxxx (next instruction address)
ENPR, xx.	Sets job priority to xx ($1 \leq xx \leq 70$)
ENS, ccc...ccc.	Allows entry of control statement ccc...ccc as the next unprocessed statement in the control statement buffer. The statement can then be processed using RNS, RSS, or DROP. ENS clears the control statement buffer of previous statements. This command is valid only when AUTO MODE is not set.
ENTL, xxxxx.	Sets the job time limit to xxxxx (77777 _g is infinite)
ENXi, xxx...xxx.	Sets register Xi=xxx...xxx in the exchange package area
ENXi, Lxxx...xxx.	Sets register Xi=xxx...xxx, left-justified, in the exchange package area
ENXi, Dccc...ccc	Sets register Xi to ccc...ccc display code characters
ENXi, b, xxxx.	Sets byte b of register Xi to xxxx
ERR.	Sets error flag, terminates program execution, and clears AUTO MODE if set
GO.	Restarts a program which has paused

<u>Command</u>	<u>Action Initiated</u>
HOLD.	DIS relinquishes the display console, but the job is held at the present status. The console must be reassigned to continue the use of DIS.
M. ccc...ccc.	Enters ccc...ccc as a CPU program command. Data is stored at RA+CCDR.
N. ccc...ccc.	Sets DIRECT CPU INPUT mode. Characters entered from keyboard are passed one character at a time, right-justified, directly into central memory at RA+CCDR. Pressing the left blank (erase) key clears DIRECT CPU INPUT mode.
OFFSWx.	Turns off sense switch x for the job ($1 \leq x \leq 6$)
ONSWx.	Sets sense switch x for the job ($1 \leq x \leq 6$)
O26.	Calls the O26 File Editor to a control point. Refer to the Instant Manual for complete operating instructions.
RCP.	Requests central processor. Depending on job priority, execution begins at the next program address for a job suspended by a DCP request.
RCS.	Sets AUTO MODE and initiates automatic control statement processing. All succeeding control statements are read from the control statement buffer and processed automatically until an SCS command or an error is encountered, or until job completion. A period (.) may also be used to initiate automatic control statement processing.
RE, xx.	Releases reservation of equipment xx (xx may not be the display assigned to DIS). Use this command with caution. Although the equipment can still be accessed, other control points may assign the equipment and operate with it.
RNS.	Reads and processes the next control statement in the DIS control statement buffer
ROLLOUT.	Allows the job to roll out. This should be issued when the message ROLLOUT REQUESTED appears.
ROLLOUT, xxxx.	Places job in rollout queue for xxxx job scheduler delay intervals. The job is automatically rolled back in after this period of time.
RSS.	Reads the next statement from the control statement buffer and stops prior to CPU execution. This is used to initiate breakpointing of a program.
RSS, ccc...ccc.	Reads statement ccc...ccc and stops prior to CPU execution. Action is similar to ENS, ccc...ccc. followed by RSS. except that the control statement buffer is not cleared.
SCS.	Clears AUTO MODE and stops automatic control statement processing.

<u>Command</u>	<u>Action Initiated</u>
T, xxxxxx.	Changes the T display to start at address xxxxxx
U, xxxxxx:	Changes the U display to start at address xxxxxx
UCC=c.	Sets the uppercase character to c
V, xxxxxx.	Changes the V display to start at address xxxxxx
X. ccc...ccc.	Processes ccc...ccc as the next control statement
* xxx.	If an asterisk (*) followed by a blank and xxx is encountered during automatic control statement processing (AUTO MODE), xxx is interpreted as a direct DIS command rather than a control statement. For example, * C4, 100. will set the left screen display to the central memory C display at address 100. Using this feature, it is possible to set up procedure files that use DIS to breakpoint a program to a desired stopping point.
xxxx.	Processes xxxx as a control statement if it is not a recognizable DIS command

MEMORY ENTRY COMMANDS

The following commands are used in conjunction with the C, D, E, F, and G memory displays to change the contents of central memory. Absolute locations or those relative to the control point to which DIS is assigned may be changed. In addition, character values or numeric data can replace the current word contents. Either one 12-bit byte or 60 bits can be changed. A single byte can be changed by inserting the byte number after the location to be changed; bytes are numbered 0 through 4 from left to right. The address and contents are assembled right-justified with leading zero fill. Leading zeros may be omitted in the entry.



Improper use of these commands may result in damage to the system or to user jobs.

The console keyboard must be unlocked to change the contents of absolute memory locations (refer to description of UNLOCK command in section 3). The = key is used to alternate between relative and absolute settings. When absolute mode is in effect, the letters ABS appear next to the display identifier at the top of the left screen. There is no visual indication when relative mode is in effect. Formats and descriptions of the memory entry commands are as follows:

<u>Command</u>	<u>Action Initiated</u>
aaaaaa, yyy...yyy. or aaaaaa+yyy...yyy.	Changes the contents of memory location aaaaaa to yyy...yyy. The second form of the command performs essentially the same function but leaves the address at aaaaaa+1 allowing immediate entry for the next memory location. †
aaaaaa, b, yyyy. or aaaaaa+b, yyyy.	Changes the contents of byte b at memory location aaaaaa to yyyy. Note that each location consists of five 12-bit bytes, numbered 0 through 4 from left to right. The second form of the command performs essentially the same function but leaves the address at aaaaaa+1 allowing immediate entry for the next memory location. †

† If the message REPEAT ENTRY is displayed above the entry line, the yy...yy field is not cleared and may be entered in successive memory locations as many times as desired by pressing (CR). The repeat entry mode is enabled by pressing (CR) before initial entry of the command. This is also applicable to the b and n fields of the second and fifth commands.

Command

Action Initiated

aaaaaa, Dyyy... yyy.
or
aaaaaa+Dyyy... yyy.

Changes the contents of memory location aaaaaa to display code characters yyy... yyy (left-justified and zero-filled). The second form of the command performs essentially the same function but leaves the address at aaaaaa+1 allowing immediate entry for the next memory location. †

aaaaaa, Lyyy... yyy.
or
aaaaaa+Lyyy... yyy.

Changes the contents of memory location aaaaaa, left-justified, to yyy... yyy. The second form of the command performs essentially the same function but leaves the address at aaaaaa+1 allowing immediate entry for the next memory location. †

aaaaaa, In, yyyyy.
or
aaaaaa+In, yyyyy.

Changes the contents of instruction n (0 through 3 from left to right) at memory location aaaaaa to yyyyy; yyyyy may be a 15- or 30-bit instruction. However, one or more bits must be set in the upper 15 bits of a 30-bit instruction or the entry will be treated as a 15-bit instruction. The second form of the command performs essentially the same function but leaves the address at aaaaaa+1, allowing immediate entry for the next memory location. †

PP CALL COMMANDS

Any PPU program with a name that begins with a letter may be called to the control point by DIS. However, before entering any of these commands, it is necessary to have a working knowledge of the PPU program to be called. This will ensure correct usage of the specified program.



Improper use of these commands may result in damage to the system or to user jobs.

In the following list, nam denotes the name of the PPU program, and n is the control point number.

<u>Command</u>	<u>Description</u>	<u>Format of PPU Call Initiated</u>
nam.	Calls PPU program nam to control point.	18/3Lnam, 6/n, 36/0
nam, xxx.	Calls PPU program nam to control point; xxx is a parameter required by nam.	18/3Lnam, 6/n, 18/0, 18/xxx
nam, xxx, yyy.	Calls PPU program nam to control point; xxx and yyy are parameters required by nam.	18/3Lnam, 6/n, 18/xxx, 18/yyy

† If the message REPEAT ENTRY is displayed above the entry line, the yy...yy field is not cleared and may be entered in successive memory locations as many times as desired by pressing **CR**. The repeat entry mode is enabled by pressing **CR** before initial entry of the command. This is also applicable to the b and n fields of the second and fifth commands.

CHARACTER SET AND FORMAT TABLES

A

DISPLAY CODE CHARACTER SET

Display Code	Character	Display Code	Character
00	(unused)	40	5
01	A	41	6
02	B	42	7
03	C	43	8
04	D	44	9
05	E	45	+
06	F	46	-
07	G	47	*
10	H	50	/
11	I	51	(
12	J	52)
13	K	53	\$
14	L	54	=
15	M	55	blank
16	N	56	,
17	O	57	.
20	P	60	≡
21	Q	61	[
22	R	62]
23	S	63	:
24	T	64	≠
25	U	65	→
26	V	66	∨ (AND)
27	W	67	∧ (OR)
30	X	70	↑
31	Y	71	↓
32	Z	72	<
33	0	73	>
34	1	74	≤
35	2	75	≥
36	3	76	¬ (NOT)
37	4	77	;

FORMAT TAPE CONFIGURATION TO BE USED WITH 512 OR 580 LINE PRINTERS

FRAME	Levels to be Punched											
	1	2	3	4	5	6	7	8	9	10	11	12
0	x	x	x	x	x	x	x	x	x	x	x	
1												
2		x										
3			x						x			
4		x		x								
5					x							
6		x	x					x				
7						x						
8		x		x			x					
9			x					x				
10		x			x					x		
11												
12		x	x	x				x				
13												
14		x				x						
15			x		x			x				
16		x		x			x					
17												
18		x	x					x				
19												
20		x		x	x					x		
21			x			x		x				
22		x										
23												
24		x	x	x			x	x				
25					x							
26		x										
27			x					x				
28		x		x			x					
29												
30		x	x		x			x		x		
31												
32		x		x								
33			x					x				
34		x										
35					x							
36		x	x	x				x				
37												
38		x										
39			x					x				
40		x		x	x					x		
41												
42		x	x				x					
43												
44		x		x								
45			x		x							
46		x										
47												
48		x	x	x				x	x			
49						x						
50		x			x					x		
51			x									
52		x		x								
53												
54		x	x						x			
55					x							
56		x		x			x	x				
57			x									
58		x										
59												
60		x	x	x	x				x	x		
61												
62		x										
63			x									
64							x					
65								x				x

FRAME	Levels to be Punched											
	1	2	3	4	5	6	7	8	9	10	11	12
66	x											
67		x	x	x	x				x	x	x	x
68			x									x
69				x						x		x
70			x		x							x
71						x						x
72			x	x						x		x
73								x				x
74			x						x			x
75				x						x		x
76			x								x	x
77												x
78			x	x	x							x
79												x
80			x						x			x
81				x						x		x
82			x							x		x
83												x
84			x	x							x	x
85												x
86			x		x	x						x
87				x				x			x	x
88			x									x
89												x
90			x	x	x				x	x		x
91												x
92			x									x
93				x								x
94			x						x			x
95												x
96			x	x						x	x	x
97												x
98			x									x
99				x						x		x
100			x									x
101								x				x
102			x	x	x					x		x
103												x
104			x									x
105				x							x	x
106			x							x		x
107												x
108			x	x					x			x
109												x
110			x									x
111				x							x	x
112			x									x
113												x
114			x	x	x					x	x	x
115									x			x
116			x								x	x
117				x								x
118			x									x
119												x
120			x	x							x	x
121												x
122			x						x	x		x
123				x								x
124			x									x
125												x
126			x	x	x	x					x	x
127												x
128			x									x
129				x					x			x
130												x
131												x
132		x		x					x			x
133												x
134		x										x

Cut the tape on the line at frame #134 and glue together. Overlap frames #0 and #132. After the tape is glued into a loop, be sure to repunch the holes in frame #129.

† Use of this format tape is recommended. It must be used if banner pages on listings are to appear in the proper orientation.

501 COMPATIBLE CARRIAGE FORMAT TAPE

FORMAT TAPE CONFIGURATION TO BE USED WITH 512 OR 580 LINE PRINTERS

FRAME	Levels to be Punched											
	1	2	3	4	5	6	7	8	9	10	11	12
0	x	x	x	x	x	x	x	x	x	x	x	x
1		x										
2		x										
3			x						x			
4		x		x								
5					x							
6		x	x			x			x			
7							x					
8		x		x				x				
9			x					x				
10		x			x				x			
11			x	x						x		
12		x	x	x		x			x			
13												
14		x					x					
15			x		x			x				
16		x		x				x				
17			x									
18		x	x			x			x			
19												
20		x		x	x				x			
21			x				x			x		
22		x										
23												
24		x	x	x		x		x	x			
25					x							
26		x										
27			x					x				
28		x		x			x					
29												
30		x	x		x	x			x	x		
31												
32		x		x				x				
33			x						x			
34		x										
35				x		x						
36		x	x	x		x			x			
37												
38		x										
39			x					x				
40		x		x	x			x		x		
41												
42		x	x			x	x		x			
43												
44		x		x								
45			x		x				x			
46		x										
47												
48		x	x	x		x		x	x			
49							x					
50		x			x				x			
51			x					x				
52		x		x								
53												
54		x	x			x			x			
55				x								
56		x		x			x	x				
57			x									
58		x										
59												
60		x	x	x	x	x			x	x		
61												
62		x										
63			x					x				
64							x		x			
65												

FRAME	Levels to be Punched											
	1	2	3	4	5	6	7	8	9	10	11	12
66	x	x	x	x	x	x	x	x	x	x	x	x
67												
68		x										
69			x							x		
70		x		x								
71					x							
72		x	x			x				x		
73							x					
74		x		x				x				
75		x							x			
76		x			x						x	
77												
78		x	x	x		x				x		
79												
80		x							x			
81			x		x					x		
82		x		x					x			
83												
84		x	x				x			x		
85												
86		x		x	x						x	
87			x					x				
88		x										
89												
90		x	x	x		x			x	x		
91					x							
92		x										
93			x									
94		x		x				x				
95												
96		x	x		x	x				x	x	
97												
98		x		x					x			
99			x							x		
100		x										
101					x		x					
102		x	x	x		x				x		
103												
104		x										
105			x							x		
106		x		x	x				x		x	
107												
108		x	x			x	x			x		
109												
110		x		x								
111			x		x					x		
112		x										
113												
114		x	x	x		x		x	x			
115								x				
116		x			x						x	
117			x							x		
118		x		x								
119												
120		x	x					x			x	
121					x							
122		x		x				x	x			
123			x								x	
124		x										
125												
126		x	x	x	x	x				x	x	
127												
128		x										
129			x						x		x	
130												
131												
132	x	x	x	x	x	x	x	x	x	x	x	x
133												
134	x	x	x	x	x	x	x	x	x	x	x	x

Cut the tape on the line at frame #134 and glue together. Overlap frames #0 and #132. After the tape is glued in to a loop, be sure to re-punch the holes in frames #129.

OPERATOR MESSAGES

B

This appendix contains an alphabetical listing of the console messages that may be of importance to the operator. Messages are arranged according to the second word of the message if the first word or first characters are variable. For example, message

filenam NOT RELEASED.

is listed alphabetically with messages beginning with the letter N; this is done because the word filenam (indicates name of a file) may change each time the message is issued. Note that lowercase characters are used to identify all fields or characters within a message that are variable. All messages beginning with numbers follow the alphabetical list.

The information provided with each message listed includes the name of the routine issuing the message, the appropriate message category, a detailed description of the message, and the appropriate operator action. There are three categories or types of messages. The message category determines the console display on which a message appears.

- Operator message
Generally, these are the messages that appear on the job status (B) display. However, this category also includes messages that are issued during deadstart or when a utility is active. In this case, the message may appear on the deadstart or utility display.
- Dayfile message
These messages appear in the system dayfile (A) display.
- Error log message
These messages appear in the system error log dayfile (A, ERROR LOG.) display.

Message	Routine	Description	Action
ACCESSED AFTER yy/mm/dd. hh.mm.ss.	PFL0AD1 PFDUMP1 (operator message)	Informative message indicating that files accessed after the date and time specified have been loaded (or dumped).	None.
ACTION.	DMQ, LDQ (operator message)	Dumping or loading of queue files has completed and one or more print files could not be dumped or loaded because the track chain for those files (in TRT) was found to be in error. The files in error are retained at the DMQ (or LDQ) control point as local files.	Inform site analyst; he should determine disposition of files and ensure that owners of these files are notified.
ACTIVE FILES ON EQ xx CANNOT INITIALIZE	MSI (dayfile message)	Informative message indicating that mass storage device xx has initialize status set but cannot be initialized because permanent files are active on that device. The initialize request will be honored when the active file count reaches zero. xx EST ordinal of mass storage device	When active file count reaches zero, REQUEST*K*DISPLAY message appears on B display and initialization of device may proceed.
ALL FILES FOR USER INDEX xxxxxx.	PFL0AD1 PFDUMP1 (operator message)	Informative message indicating that all files for the specified user index have been loaded (or dumped). xxxxxx User index identification	None.
ALTERNATE DEVICE NOT FOUND.	PFL0AD1 (dayfile message)	Device on which a direct access file is to be loaded (specified in catalog) is not available in this system and a destination device was not specified; file is skipped. This message applies only to direct access files, is a nonfatal system error, and is accompanied by the message STATUS ERR.	To load the skipped file, rerun the utility and specify a destination device on which the file may be loaded (DD option).
ALTERNATE DEVICE NOT FOUND.	PFU (dayfile message)	PFU is unable to locate the alternate device for a direct access file which does not reside on a master device.	Make device available and retry.
ANY LOADING TO THIS POINT INCOMPLETE - A REINITIALIZE AND RELOAD IS REQUIRED. PFL0AD ABORTED.	PFL0AD1 (dayfile message)	A fatal system error occurred causing PFL0AD to abort; the load was incomplete.	Initialize a device and retry the load. It is also advisable to check the dayfile to determine the cause of the error.
ARGUMENT ERROR.	DAYFILE (dayfile message)	One of the following: Dayfile dump request contained more than one argument.	Repeat dayfile dump with only dump filename specified.
	ISF (dayfile message)	Parameter list on ISF entry contained an illegal parameter.	Repeat ISF entry with correct parameter.

Message	Routine	Description	Action
ASSIGN TAPE.	PFL0AD1 (operator message)	The archive tape containing files to be loaded has not been assigned.	Ensure that the correct archive tape (created by PFDUMP) is assigned.
BAD SYSTEM SECTOR (filenam) (user index)	PFDUMPI (dayfile message)	Error encountered in system sector of direct access file (filenam); file is skipped. This is a nonfatal system error.	Inform site analyst. System sector for specified file must be corrected before it can be dumped.
BLANK LABELS DO NOT VERIFY.	BLANK (dayfile message)	This message can occur only when blank labeling a tape and indicates that the tape label read does not match the label written.	Repeat the blank labeling operation or inform the site analyst.
BOTH FAMILY AND PACK NAME	PFS (dayfile message)	Family and pack name may not both be specified.	Reenter parameters for utility specified.
BUFFER CONTROL WORD ERROR.	PFU, SLL (dayfile message)	Detected that word count in disk linkage is greater than 100B.	Inform site analyst.
Cnn Ee, INCORRECT CONTROLLER RESPONSE.	1MT/3MA (dayfile message)	An internal reject was detected on the specified tape controller equipment. nn Channel number e Controller equipment number	Inform site analyst.
Cnn, NO 6681.	1MT/3MA (dayfile message)	No response detected from 6681 data channel converter. nn Channel number	Inform site analyst.
Cnn, EQUIPMENT NUMBER .LT. 4.	1MT/3MA (dayfile message)	The EST entry for a magnetic tape unit on channel nn specifies that the associated controller equipment number is less than 4 (valid controller equipment numbers are 4 through 7). nn Channel number	Inform site analyst; the controller equipment number must be changed.
Cnn, ILL.	1MT/3MA (dayfile message)	Hardware malfunction on channel nn. nn Channel number	Inform customer engineer.
Cnn, MTS FIRMWARE LOAD ERRORS.	1MT/3MA (dayfile message)	Unable to load magnetic tape controller firmware on channel nn. nn Channel number	Inform customer engineer.
Cnn, Tt MTS CONVERSION TABLE LOAD ERRORS,	1MT/3MA (dayfile message)	Errors occurred in loading of conversion table. nn Channel number t Conversion table - one of the following. 0 - ASCII table 1 - EBCDIC table 2 - BCD table	Inform site analyst.

Message	Routine	Description	Action
CANNOT ALLOCATE DEVICE	MSI (operator message)	Cannot allocate a multispindle device for one of the following reasons: 1. Not enough spare spindles available 2. Spare spindles not up and allocatable 3. An attempt was made to allocate a non-removable device.	Perform one of the following: 1. Decrease pack count and enter GO. 2. Enter CLEAR to clear initialize status for the device.
CATALOG CONTROL WORD MISSING.	PFLOAD1 (dayfile message)	Either the catalog control word was not the initial control word on the archive file, or the entire catalog entry is not present. This is a nonfatal system error and is accompanied by the message TAPE ERROR (filenam) (user index).	Retry or use backup tape.
CATALOG INDEX OUT OF RANGE.	PFDUMP1 (dayfile message)	Location of catalog buffer is not in buffer range. This is a fatal system error; PFDUMP aborts.	Retry PFDUMP operation.
CATALOG TRACK NOT FOUND.	PFU (dayfile message)	No permanent file device could be found for the user index being processed.	Inform site analyst.
CHECK DAYFILE FOR ERRORS.	PFLOAD1 PFDUMP1 (operator message)	Informative message indicating that the utility has generated dayfile messages which should be brought to the attention of the operator.	Examine error messages in dayfile.
CLEANUP SALVARE FILE.	TELEX2 (dayfile message)	Informative message indicating that TELEX has begun to release all system resources currently assigned to terminals in the recovery state. This occurs only when TELEX is dropped (1.STOP. command).	None.
CMR OVERFLOW.	SET/ICM (operator message)	Address of the FNT/FST (file name/file status table) is greater than 12 bits.	Inform site analyst.
CMRDECK NOT ON TAPE.	SET (operator message)	The CMRDECK number specified on bits 3 through 8 of word 13 on the deadstart panel is not contained on the deadstart tape being used.	Redeadstart and select correct CMRDECK number via deadstart panel switches or deadstart options display.
CONTINUING DESTROYS MID=id DAYFILES, TYPE GO TO PROCEED.	RMS (operator message)	Dayfiles have been found on a device which was used by a machine having a different machine identification than that of the current system. These dayfiles may be saved by running the device on a machine with a matching machine identification, or simply discarded. id Machine identification	Inform site analyst; recommended action is: 1. Redeadstart with proper machine identification to retain the dayfiles, or 2. Type GO to discard dayfiles. Deadstart continues and dayfiles are lost.
COMPLETE.	TELEX2 (dayfile message)	Informative message indicating that TELEX termination is complete.	None.

Message	Routine	Description	Action
CONTINUING DESTROYS PFS RECOVERY OF DEVICE IMPOSSIBLE.	RMS (operator message)	System residence was requested for device on which permanent files reside but device cannot be recovered as configured. For example, all packs of a multispindle device are not present in the configuration, packs are out of order, etc.	Inform site analyst; recommended action is: 1. Redeadstart without system on this device, or 2. Correct configuration and redeadstart, or, 3. Type GO to initialize device with parameters defined in label. Deadstart continues and permanent files on device are lost.
CPU ERROR EXIT xx AT yyyyyy.	1AJ (dayfile message)	Hardware and/or program CPU error exit conditions detected. xx Error exit condition yyyyyy Location at which error exit conditions were detected	Inform customer engineer if the first character in the condition code xx is non-zero.
CPUMTR ERROR EXIT.	DSD (operator message)	CPUMTR has executed an error exit sequence. The exit mode condition bits of location zero of CMR contain the conditions causing CPUMTR to error exit.	Inform customer engineer. Redeadstart is necessary.
CPxx, COMPARE ERROR.	1CD (error log message)	Detected compare error on card punch xx EST ordinal of 415 card punch	Job output must be repunched via DSD command RERUN (refer to section 3).
CPxx, FEED FAILURE.	1CD (error log message)	Card punch xx experiencing card feed failure xx EST ordinal of 415 card punch	Inform customer engineer.
CPxx,		Refer to the EQxx, . . . series of corresponding messages for full descriptions of messages beginning with CPxx,	

Message	Routine	Description	Action
CRxx, COMPARE ERROR.	1CD (error log message)	Detected compare error on card reader xx EST ordinal of 405 card reader	Reread deck.
CRxx, RE-RD 1 CD. COMPARE ERROR.	1CD (operator message)	Card compare error detected on card reader xx. xx EST ordinal of 405 card reader	<ol style="list-style-type: none"> 1. Remove first card in input hopper from feed station 2. Place last card from output hopper in front of cards in input hopper (including card just removed from feed station). 3. Release cards in input hopper and press READY switch.
CRxx, RE-READ n CARD(S).	2RC (dayfile message)	Error in cards read from card reader. xx EST ordinal of 405 card reader n Number of cards to be reread	Reread last n cards in the output stacker. If error still occurs, mark the card as mispunched and end job.
CRxx, ADVANCE 1 CD. RE-RD 3 CDS.	1CD (operator message)	Card reader xx has encountered a transmission parity error, an incomplete data transfer, or a binary checksum error. xx EST ordinal of 405 card reader	<ol style="list-style-type: none"> 1. Move back all cards in input hopper except first card in hopper (in the feed station). 2. Advance this card to output hopper by pressing RELOAD MEMORY while holding back remaining cards. (The input hopper must appear to be empty to card reader.) 3. Place last 3 cards from output hopper in front of cards in input hopper. 4. Release cards in input hopper and press READY switch.
CRxx,		Refer to the EQxx, . . . series of corresponding messages for full descriptions of messages beginning with CRxx.	
CREATED AFTER yy/mm/dd. hh.mm.ss.	PFLOAD1 PFDUMPI (operator message)	Informative message indicating that files created after the specified date and time have been loaded (or dumped).	None.

Message	Routine	Description	Action
DAF BUSY (filenam) (user index)	PFDUMP1 (dayfile message)	Direct access file (filenam) cannot be dumped because it is attached in WRITE mode; file is skipped. This is a nonfatal system error.	Retry PFDUMP operation after user has released the file.
DAF ZERO LENGTH (filenam) (user index)	PFDUMP1 (dayfile message)	Direct access file (filenam) was empty and therefore could not be dumped; file is skipped. This is a nonfatal system error.	None
DExx, Cyy, ec, ann, Sittt, FNqqqq-r. or DExx, Cyy, ec, ann, Sittt, Axxxxxxx.	6DE (operator, error log, and dayfile message)	An error has been detected on extended core storage. The nature of the error is determined by examining each parameter in the message. xx EST ordinal of ECS unit yy Channel number ec Error code - one of following: PE - Parity error/checkword error AD - Address error ST - Device status error FN - Function reject for any device connected to data channel converter (6681), or function timed out with no response. RS - Device reserved NR - Device not ready a Type of operation - one of the following: R - Read W - Write nn Retry count - error is considered irrecoverable after following number of retries: PE - 10 AD - 10 ST - 64 FN - 10 RS - indefinite NR - indefinite tttt Device status - implies there was an incomplete transfer if status does not indicate an error qqqq Function rejected r Data channel converter (6681) status - if present Axxxxxxx Physical address at beginning of block	Dump error log dayfile to printer (refer to description of ERRLOG,xx command), and make it available to the customer engineer and/or site analyst.
DEMAND FILE ERROR.	RESEX (dayfile message)	Resource execution error was encountered. This error occurred because the demand file (RESEXDF) entry does not match the job name.	Inform site analyst.
DESTINATION DEVICE NOT FOUND.	PFLOAD1 (dayfile message)	The destination device specified is not in the system. This is a fatal system error; PFLOAD aborts.	Rerun the utility and specify the correct destination device (DD option).

Message	Routine	Description	Action
DETECTED IN CLD.	SYSEdit (operator message)	Error encountered while building the system library. Disk resident overlay (OVL) or absolute (ABS) program is not formatted correctly. Deadstart processing halts when this error is detected.	Redeadstart at a different tape density or use another tape unit or a different deadstart tape. If the error persists, inform the site analyst.
DETECTED IN DIRECTORY.	SYSEdit (operator message)	System file error occurred while building the system library. Start of the system library was not found. Deadstart processing halts when this error is detected.	Redeadstart at a different tape density or use another tape unit or a different deadstart tape. If the error persists, inform the site analyst.
DETECTED IN PLD.	SYSEdit (operator message)	System file error occurred while building the system library. Disk resident PPU program is not formatted correctly. Deadstart processing halts when this error is detected.	Redeadstart at a different tape density or use another tape unit or a different deadstart tape. If the error persists, inform the site analyst.
DETECTED IN RCL.	SYSEdit (operator message)	Error encountered while building the system library. Central memory resident overlay (OVL) or absolute (ABS) program is not formatted correctly. Deadstart processing halts when this error is detected.	Redeadstart at a different tape density or use another tape unit or a different deadstart tape. If the error persists, inform the site analyst.
DETECTED IN RPL.	SYSEdit (operator message)	Error encountered while building the system library. Central memory resident PPU program is not formatted correctly. Deadstart processing halts when this error is detected.	Redeadstart at a different tape density or use another tape unit or a different deadstart tape. If the error persists, inform the site analyst.
DEVICE NOT FIRST IN CHAIN	MSI (operator message)	To prevent destroying the integrity of a chained multi-spindle device, initialization will take place only if the device is first in the chain.	The only input accepted at this time is RERUN or CLEAR. Enter RERUN to update list (on K display) of devices with initialize status set. If first device in chain is not included in new list, enter CLEAR to clear initialize status for the current device.
DEVICE NOT INITIALIZED.	PFU (dayfile message)	PFLOAD is attempting to load permanent files to an uninitialized master device.	Either initialize the device or specify OP=N on PFLOAD parameters.

Message	Routine	Description	Action
DEVICE NOT REMOVABLE	MSI (operator message)	A nonremovable device was selected for chaining in a multispindle string. Before initialization and chaining can be performed, it is required that all physical units to be included in the multispindle string be defined as removable.	Enter CLEAR to clear initialize status for nonremovable device.
DEVICE SPECIFIED NOT FOUND	PFLOAD1 PFDUMP1 (dayfile message)	Device number (DN) specified was not defined in system. This is a fatal system error; PFLOAD (or PFDUMP) aborts.	Retry operation with device currently defined in the system.
DIRECT ACCESS FILE ERROR.	PFM (error log message) SFM (dayfile message)	System sector data for file does not verify.	Inform site analyst.
DIRECT TOO LONG *filenam* *user index*.	PFDUMP1 (dayfile message)	Direct access file (filenam) is too long and is automatically truncated. The length will be corrected in the catalog entry when it is reloaded. This is a nonfatal system error.	Inform site analyst.
DIRECT TOO SHORT (filenam) (user index).	PFDUMP1 (dayfile message)	Direct access file (filenam) is too short and is automatically padded with EOF marks. When file is reloaded, EOF marks added during dump will be deleted and length will be corrected in catalog entry. This is a nonfatal system error.	Inform site analyst.
Dlxx, Cyy, ec, ann, Stttt, FNqqqq. or Dlxx, Cyy, ec, ann, Stttt, Uxx Cxxx Txx Sxx.	6DI (operator, error log, and dayfile message)	An error has been detected on mass storage device xx. The nature of the error is determined by examining each parameter in the message. xx EST ordinal of 844 disk yy Channel number ec Error code - one of following: PE - Parity error/checkword error AD - Address error ST - Device status error FT - Function timed out with no response RS - Device reserved NR - Device not ready a Type of operation - one of following: R - Read W - Write nn Retry count - error is considered irrecoverable after following number of retries: PE - 10 AD - 10 ST - 64 FT - 3 RS - indefinite NR - indefinite	Dump error log dayfile to printer (refer to description of ERRLOG,xx. command), and make it available to the customer engineer and/or site analyst.

Message	Routine	Description	Action
Dlxx, sss.....sss. Dlxx, sss...sss.	6DI (error log message)	<p>tttt Device status - Implies there was an incomplete transfer if status does not indicate an error</p> <p>qqqq Function rejected</p> <p>Uxx Physical unit</p> <p>Cxxx Physical cylinder</p> <p>Txx Physical track</p> <p>Sxx Physical sector</p> <p>} physical address</p> <p>This message may accompany the preceding error log message to provide additional status information.</p> <p>xx EST ordinal of 844 disk</p> <p>s-s First line of 32 digits and second line of 16 digits containing detail status. Refer to 7054/844 Operation and Programming Manual for a description of these bits.</p>	Dump error log dayfile to printer (refer to description of ERRLOG, xx. command), and make it available to the customer engineer and/or site analyst.
DN CANNOT BE ZERO	MSI (operator message)	DN=0 was entered to clear a duplicate device number error. The device number (DN) cannot be zero for a family type device.	Enter a nonzero value to continue or enter GO to override the error.
DNdn FM xxxxxxx IQFT INTERLOCKED.	QREC (dayfile message)	The track interlock on the IQFT file is set. It is possible IQFT is currently being used by another utility.	Retry at a later time.
DNdn FM xxxxxxx FNT FULL.	QREC (dayfile message)	The FNT was filled while recovering the specified device.	Retry at a later time when the system is not as busy.
DNdn FM xxxxxxx MS ERROR.	QREC (dayfile message)	A mass storage error occurred while processing the IQFT file on the specified device.	Consult site analyst.
DNdn FM xxxxxxx NO IQFT FILE.	QREC (dayfile message)	No IQFT file exists for the specified device.	None.
DNdn FM xxxxxxx UNDEFINED ERROR.	QREC (dayfile message)	System failure has occurred generating an erroneous error code.	Consult site analyst.

Message	Routine	Description	Action
DPxx, Cyy, ec, ann, Stttt, FNqqqq-r. or DPxx, Cyy, ec, ann, Stttt, Axxxxxxx.	6DP (operator, error log, and dayfile message)	An error has been detected on distributive data path (DDP). The nature of the error is determined by examining each parameter in the message. xx EST ordinal of DDP/ECS yy Channel number ec Error code - one of following: PE - Parity error/checkword error AD - Address error ST - Device status error FN - Function reject for any device connected to data channel converter (6681), or function timed out with no response RS - Device reserved NR - Device not ready a Type of operation - one of following: R - Read W - Write nn Retry count - error is considered irrecoverable after following number of retries: PE - 10 AD - 10 ST - 64 FN - 10 RS - indefinite NR - indefinite tttt Device status - implies there was an incomplete transfer if status does not indicate an error qqqq Function rejected r Data channel converter (6681) status - if present Axxxxxxx Physical address at beginning of block	Dump error log dayfile to printer (refer to description of ERRLOG,xx. command), and make it available to the customer engineer and/or site analyst.
DUMPING (filenam) (user index)	PFDUMP1 (operator message)	Specified file (filenam) is being retrieved from mass storage for dumping to archive file.	None.
DUMP OR DROP.	1LS (operator message)	Export has detected an abnormal condition which will not allow continued operation.	Inform site analyst; recommended action is to dump Export field length (via DMP control card entered under DIS control), then drop EXPORTL (via DSD command n.STOP.).
DUMPING - DIRECT ACCESS FILES ONLY.	PFDUMP1 (operator message)	Informative message indicating that only direct access files have been selected to be dumped (OP=D option specified).	None.

Message	Routine	Description	Action
DUMPING - INDIRECT ACCESS FILES ONLY.	PFDUMP1 (operator message)	Informative message indicating that only indirect access files have been selected to be dumped (OP=I option specified).	None.
DUPLICATE BITS IN MASK	MSI (operator message)	Device mask for the family has duplicate bits set. This destroys the integrity of the permanent file system by creating an ambiguous mapping of user indices.	Correct and enter GO, or enter GO to override. This is the only input accepted at this time.
DUPLICATE DN	MSI (operator message)	Device number specified is the same as that specified for another device in the family.	Correct and enter GO or enter GO to override. This is the only input accepted at this time.
DUPLICATE FILE NAME.	PFU (dayfile message)	There is a file at the control point whose name is the same as one of the files used by the permanent file utility that is currently active.	Inform site analyst; recommended action is to return or rename the file and retry.
DUPLICATE PN	MSI (operator message)	Another pack in the system has the same name.	Change the packname or remove the other device from the system.
DURATION TIME TERMINATE.	TELEX2 (dayfile message)	TELEX has aborted in less than 60 seconds after initialization or last recovery.	Inform site analyst.
EMPTY LOAD FILE.	LDQ (dayfile message)	The file to be loaded (dump file specified by lfn in the LDQ call) is empty.	Rewind the file and try again.
ENTER E TO TERMINATE LOADING. L TO LIST REMAINING FILES. GO TO RESUME INCREMENTAL LOAD.	PFLoad1 (operator message)	This message occurs as a result of a complete load of an archive file during incremental load operations. The message appears at the end of a reel during incremental loading to allow the operator to optionally load additional reels.	Described in message.
ENTERED PARAMETER IS ILLEGAL.	PFS (operator message)	Parameter is not in legal format.	Check dayfile for more detail on error. Enter correct parameter via the K display.
EQxx, BAD SYSTEM SECTOR.	110/XSP (error log and dayfile message)	An irrecoverable error occurred when reading the system sector of the print or punch file. xx EST ordinal of device	Inform site analyst.

Message	Routine	Description	Action
<p>EQ, Ccc-e-uu, vsn, rw, est, Sss, scon1, scon2. EQ, Ccc-fff, Iii, Bnnnnn, Lbbbb, Pppppppp. EQ, Ccc, Eec, Hooooooooo, type.</p>	<p>1MT (error log and dayfile message)</p>	<p>Three-line message describing a magnetic tape hardware malfunction occurring on a 657 or 659 tape unit. EQ MT for 657; NT for 659</p> <p>The first line provides the following information:</p> <p>cc-e-uu Channel, equipment (tape controller), and physical unit number of tape unit on which error was encountered.</p> <p>vsn Volume serial number associated with the tape on the specified unit.</p> <p>rw Read (RD) or write (WR) operation; any operation not involving an actual read or write is listed as a read.</p> <p>est EST ordinal of the unit on which the tape was written. This is provided only for labeled tapes generated under NOS 1.0; otherwise, the field is blank.</p> <p>ss Status of the 6681/6684 interface. First digit represents a 00 where bit a=2¹¹ of status; second digit represents bits 2²-2⁰ of status.</p> <p>scon1 Status of the tape controller. scon2 Status-2 of the controller, if available.</p> <p>The second line of the message contains:</p> <p>cc Channel number; the channel number is repeated to allow the analyst to associate this message with the first message if errors are occurring on more than one tape channel at the same time.</p> <p>ff Software function on which the error occurred.</p> <p>ii Error iteration; number of times error has been encountered on this unit without successful recovery.</p> <p>nnnnn Block number on which error occurred.</p> <p>bbbb Length of block on which error occurred, in octal bytes.</p> <p>ppppppp 1MT internal error parameters.</p> <p>The third line of the message contains the following information:</p> <p>cc Channel number; the channel number is repeated to allow the analyst to associate this message with the first and second messages if errors are occurring on more than one tape channel at the same time.</p> <p>ec Octal error code value.</p>	<p>Operator action is indicated opposite description of type field in third line of message.</p>

Message	Routine	Description	Action
<p>EQ, Ccc-uu, vsn, rw, est, Ss, GSgggg. EQ, Ccc, Dddd...d</p> <p>EQ, Ccc, Fff, Iii, Bnnnnnn, Lbbbb, Ppppppppp. EQ, Ccc, Eec, Hhhhhhhh, type.</p>	<p>1MT (error log and dayfile message)</p>	<p>ooooooooo Controller options selected at the time of the error; each two digits is a function code. type Additional description of the error (one of the following):</p> <p>BAD ERASE. Error detected after an erase was attempted to recover a write error</p> <p>BLOCK TOO LARGE. Data block was larger than expected.</p> <p>BUSY. Unit was still busy after 1 second.</p> <p>CHANNEL ILL. Channel is not accepting function or status requests properly.</p> <p>CON. REJ. Connect reject; unable to connect to the unit.</p> <p>CON. REJ. OFF. Connect reject; unable to connect to unit. Unit turned OFF.</p> <p>DENSITY CHANGE. Either user error where auto select does not match user selection (9-track only), or hardware error where status does not match user selection.</p> <p>FNnn, Pyyyy. Function nn was rejected by the controller; yyyy is the address in 1MT where the function was initiated.</p> <p>Lbbbb, Bnnnnnn. The length (bbbb) and block number (nnnnn) read from trailer bytes in block did not match the actual length or the block number read; given in previous message line.</p> <p>NO EOP. No end-of-operation detected from unit within 1 second.</p> <p>NOISE. A noise block was skipped on the tape.</p> <p>NOT READY. Tape unit dropped ready status.</p> <p>ON THE FLY. Error was corrected as the data was read.</p> <p>POSITION LOST. The last good block written cannot be found during write recovery.</p> <p>RECOVERED. Previously reported error has been successfully recovered.</p> <p>STATUS. Error type cannot be determined so actual controller status is returned.</p> <p>WRONG PARITY. Tape was written in parity opposite that being read.</p> <p>Four-line message describing a magnetic tape hardware malfunction occurring on a 667 or 669 tape unit. EQ MT for 667; NT for 669</p>	<p>Inform site analyst.</p> <p>None.</p> <p>Inform customer engineer. Inform customer engineer.</p> <p>Inform site analyst.</p> <p>Inform site analyst.</p> <p>Inform site analyst.</p> <p>None.</p> <p>Inform customer engineer.</p> <p>None. Make unit ready. None.</p> <p>None.</p> <p>None.</p> <p>Inform site analyst.</p> <p>None.</p> <p>Operator action is indicated opposite description of type field in fourth line of message.</p>

Message	Routine	Description	Action
		<p>The first line provides the following information:</p> <p>cc-uu Channel and physical unit number of tape unit on which error was encountered.</p> <p>vsn Volume serial number associated with the tape on the specified unit.</p> <p>rw Read (RD) or write (WR) operation; any operation not involving an actual read or write is listed as a read.</p> <p>est EST ordinal of the unit on which the tape was written. This is provided only for labeled tapes generated under NOS 1.0; otherwise, the field is blank.</p> <p>s Channel status.</p> <p>gggg General status of magnetic tape unit.</p> <p>The second line of the message contains:</p> <p>cc Channel number; the channel number is repeated to allow the analyst to associate this message with the first message if errors are occurring on more than one tape channel at the same time.</p> <p>ddd...d Detailed status of magnetic tape unit.</p> <p>The third line of the message contains:</p> <p>cc Channel number; repeated to associate this message with the previous messages.</p> <p>ff Software function on which the error occurred.</p> <p>ii Error iteration; number of times error has been encountered on this unit without successful recovery.</p> <p>nnnnn Block number on which error occurred.</p> <p>bbbb Length of block on which error occurred, in octal bytes.</p> <p>ppppppp 1MT internal error parameters.</p> <p>The fourth line of the message contains:</p> <p>cc Channel number; repeated to associate this message with the previous messages.</p> <p>ec Octal error code value.</p> <p>hhhhhhh Unit format parameters. See Magnetic Tape Subsystem Reference Manual for descriptions of unit format parameter fields.</p> <p>type Additional description of the error (one of the following):</p> <p>BAD ERASE. Error detected after an erase was attempted to recover a write error.</p>	<p>Inform site analyst.</p>

Message	Routine	Description	Action
		B. C. RESTART. Magnetic tape controller firmware restarted.	None.
		BLOCK TOO LARGE. Data block was larger than expected.	None.
		BUSY. Unit was still busy after 1 second.	Inform customer engineer.
		CHANNEL ILL. Channel is not accepting function or status requests properly.	Inform customer engineer.
		CON. REJ. Connect reject; unable to connect to the unit.	Inform site analyst.
		CON. REJ. OFF. Connect reject; unable to connect to unit. Unit turned OFF.	Inform site analyst.
		DENSITY CHANGE. Either user error where auto select does not match user selection (9-track only), or a hardware error where status does not match user selection,	Inform site analyst.
		FNnn, Pyyyy. Function nn was rejected by the controller; yyyy is the address in 1MT where the function was initiated.	Inform site analyst.
		Lbbbb, Bnnnnn. The length (bbbb) and block number (nnnnn) read from trailer bytes in block did not match the actual length or the block number read; given in previous message line.	None.
		NO EOP. No end-of-operation detected from unit within 1 second.	Inform customer engineer.
		NOISE. A noise block was skipped on the tape.	None.
		NOT READY. Tape unit dropped ready status.	Make unit ready.
		ON THE FLY. Error was corrected as the data was read.	None.
		POSITION LOST. The last good block written cannot be found during write recovery.	None.
		RECOVERED. Previously reported error has been successfully recovered.	None.
		STATUS. Error type cannot be determined so actual controller status is returned.	Inform site analyst.
		WRONG PARITY. Tape was written in parity opposite that being read.	None.
EQ OR DN ILLEGAL	MSI (operator message)	Either the specified EST ordinal (EQ) is greater than 100B or does not define a mass storage device, or the device number specified (DN) is greater than 100B.	Correct and enter GO.
EQUIPMENT NOT AVAILABLE.	RESEX (dayfile message)	Tape assignment error was encountered; equipment is not defined in system or is currently being used by another job.	Assign an available unit.
EQxx, CAN'T ACCESS DATA.	1MT (operator message)	Tape mounted on magnetic tape unit xx has label information that does not allow user access to data on that tape. EQ MT for 7-track; NT for 9-track xx EST ordinal of magnetic tape unit	Mount correct tape or drop the job (refer to n.DROP command).

Message	Routine	Description	Action
EQxx, Ccc, TURNED OFF.	1MT (dayfile and error log message)	Magnetic tape unit xx has been logically turned off due to function reject. EQ MT for 7-track; NT for 9-track xx EST ordinal of magnetic tape unit cc Channel number	Inform customer engineer.
EQxx, CHyy Adddd INCOMPLETE TRANSFER.	1CD (error log message) 1IO (dayfile and error log message)	An incomplete data transfer was detected by a local batch equipment driver. EQ One of the following equipment types: CP 415 card punch CR 405 card reader LP 512 or 580 line printer LQ 512 line printer LR 580 line printer xx EST ordinal of local batch equipment yy Channel number dddd Octal byte count not transferred	Inform customer engineer.
EQxx, CHyy CONTROLLER HUNG BUSY.	1CD (error log message) 1IO (dayfile and error log message)	The specified local batch controller did not drop BUSY status. EQ One of the following equipment types: CP 415 card punch CR 405 card reader LP 512 or 580 line printer LQ 512 line printer LR 580 line printer xx EST ordinal of local batch equipment yy Channel number	Inform customer engineer.
EQxx, CHyy Fzzzz FUNCTION TIMEOUT.	1CD (error log message) 1IO (dayfile and error log message)	No response (inactive) was received after issuing a function code to the specified local batch equipment. (Converter and equipment status unavailable.) EQ One of the following equipment types: CP 415 card punch CR 405 card reader LP 512 or 580 line printer LQ 512 line printer LR 580 line printer xx EST ordinal of local batch equipment yy Channel number zzzz Function code	Inform customer engineer.
EQxx, CHyy, PRINT ERROR LIMIT EXCEEDED.	1CD (error log message)	Maximum number of consecutive print errors was detected on line printer xx. EQ One of the following equipment types: LP 512 or 580 line printer LQ 512 line printer LR 580 line printer xx EST ordinal of line printer yy Channel number	Inform customer engineer.

Message	Routine	Description	Action
EQxx, CHyy Fzzzz REJ Paaaa,Cbbbb,Ecccc.	<p>1CD (error log message)</p> <p>1IO (dayfile and error log message)</p>	<p>Detected function reject or transmission parity error on the specified local batch equipment.</p> <p>EQ One of the following equipment types: CP 415 card punch CR 405 card reader LP 512 or 580 line printer LQ 512 line printer LR 580 line printer</p> <p>xx EST ordinal of local batch equipment yy Channel number zzzz Function code aaaa Driver (1CD) address bbbb Converter status cccc Equipment status</p>	Inform customer engineer.
EQxx, CHyy RESERVED.	<p>1IO (dayfile and error log message)</p>	<p>The specified local batch equipment is reserved and cannot be connected on channel yy.</p> <p>EQ One of the following equipment types: CP 415 card punch CR 405 card reader LP 512 or 580 line printer LQ 512 line printer LR 580 line printer</p> <p>xx EST ordinal of local batch equipment yy Channel number</p>	Inform customer engineer.
EQxx, CHyy TURNED OFF.	<p>1CD (error log message)</p> <p>1IO (dayfile and error log message)</p>	<p>The specified local batch equipment was logically turned off (OFF status set in EST). Note: This message is preceded in the error log by a message for the same equipment which specifies the failing condition.</p> <p>EQ One of the following equipment types: CP 415 card punch CR 405 card reader LP 512 or 580 line printer LQ 512 line printer LR 580 line printer</p> <p>xx EST ordinal of local batch equipment yy Channel number</p>	Inform customer engineer.

Message	Routine	Description	Action								
EQxx,DNdn, DIRECT ACCESS FILE ERROR, AT nnn.	PFM (error log and dayfile message)	The system sector data for the file does not match the catalog data. xx EST ordinal of device dn Device number									
EQxx,DNdn, FILE LENGTH ERROR, AT nnn.	PFM (error log and dayfile message)	The length of a file does not equal the catalog length. xx EST ordinal of device dn Device number The action taken depends on the type of command issued. <table border="0"> <thead> <tr> <th><u>Command</u></th> <th><u>Action</u></th> </tr> </thead> <tbody> <tr> <td>GET</td> <td>A local file is created with length being the actual length retrieved.</td> </tr> <tr> <td>SAVE</td> <td>If file length is longer than TRT specification, file is truncated.</td> </tr> <tr> <td>REPLACE</td> <td>Same as for SAVE.</td> </tr> </tbody> </table>	<u>Command</u>	<u>Action</u>	GET	A local file is created with length being the actual length retrieved.	SAVE	If file length is longer than TRT specification, file is truncated.	REPLACE	Same as for SAVE.	
<u>Command</u>	<u>Action</u>										
GET	A local file is created with length being the actual length retrieved.										
SAVE	If file length is longer than TRT specification, file is truncated.										
REPLACE	Same as for SAVE.										
EQxx,DNdn, MASS STORAGE ERROR AT nnn.	PFM (error log and dayfile message)	An error was encountered in reading a portion of the permanent file catalog or permit information. xx EST ordinal of device dn Device number									
EQxx,DNdn, RANDOM INDEX ERROR, AT nnn.	PFM (error log and dayfile message)	The random disk address of the permit sector is in error. xx EST ordinal of device dn Device number									
EQxx,DNdn, REPLACE ERROR, AT nnn.	PFM (error log and dayfile message)	The same file was found twice during a catalog search. This error can occur for APPEND or REPLACE commands after a file is found and purged and the catalog search is continued. xx EST ordinal of device dn Device number									
EQxx,DNdn, TRACK LIMIT, AT nnn.	PFM (error log and dayfile message)	No allocatable tracks remain on equipment xx. xx EST ordinal of device dn Device number									
EQxx FLAWING INCOMPLETE.	IMS	Flaw map could not be read during initialization. For multi-unit 844 equipment, some flaws may not have been recorded.	Reformat 881 packs.								

Message	Routine	Description	Action
EQxx, FM=mmmmmm, PF=pppppp, U=iiiiii	PFM (error log and dayfile message)	Additional line written only in error log after one of the following messages: EQxx, DNdn, DIRECT ACCESS FILE ERROR, AT nnn. EQxx, DNdn, FILE LENGTH ERROR, AT nnn. EQxx, DNdn, MASS STORAGE ERROR, AT nnn. EQxx, DNdn, RANDOM INDEX ERROR, AT nnn. EQxx, DNdn, REPLACE ERROR, AT nnn. EQxx, DNdn, TRACK LIMIT, AT nnn. xx EST ordinal of device mmmmmm Family name pppppp Permanent file name iiiiii User index	
EQxx. HOLD.	1CD (operator message)	Line printer xx is waiting. EQ One of the following equipment types: LP 512 or 580 line printer LQ 512 line printer LR 580 line printer xx EST ordinal of line printer	If desired, continue printing via DSD command CONTINUE (refer to section 3).
EQxx INITIALIZED.	IMS (dayfile message)	Informative message indicating that mass storage device xx has successfully been initialized. xx EST ordinal of device	None.
EQxx, NEEDS LABEL.	1MT (operator message)	Tape mounted on magnetic tape unit xx is unlabeled and job requires a labeled tape. On labeled multi-reel files, all subsequent reels must be labeled. EQ MT for 7-track; NT for 9-track xx EST ordinal of magnetic tape unit	Mount correct tape.
EQxx nnnn DIRECT ACCESS FILE ERRORS.	REC (dayfile message)	Number of direct access files on mass storage device xx that could not be recovered during mass storage device recovery (performed during deadstart or when a removable device is introduced into the system). The files in error are identified by LENGTH ERROR messages. In addition, the number of files in error (nnnn) should equal the number of LENGTH ERROR messages issued. xx EST ordinal of device nnnn Number of files in error	Inform site analyst; files should either be reloaded or redefined (refer to description of LENGTH ERROR message for additional information).

Message	Routine	Description	Action								
EQxx,DNdn, DIRECT ACCESS FILE ERROR, AT nnn.	PFM (error log and dayfile message)	The system sector data for the file does not match the catalog data. xx EST ordinal of device dn Device number									
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GET	A local file is created with length being the actual length retrieved.										
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Message	Routine	Description	Action
EQxx, FM=mmmmmmm, PF=ppppppp, UI=iiiiii	PFM (error log and dayfile message)	Additional line written only in error log after one of the following messages: EQxx, DNdn, DIRECT ACCESS FILE ERROR, AT nnn. EQxx, DNdn, FILE LENGTH ERROR, AT nnn. EQxx, DNdn, MASS STORAGE ERROR, AT nnn. EQxx, DNdn, RANDOM INDEX ERROR, AT nnn. EQxx, DNdn, REPLACE ERROR, AT nnn. EQxx, DNdn, TRACK LIMIT, AT nnn. xx EST ordinal of device mmmmmmm Family name ppppppp Permanent file name iiiiii User index	
EQxx. HOLD.	ICD (operator message)	Line printer xx is waiting. EQ One of the following equipment types: LP 512 or 580 line printer LQ 512 line printer LR 580 line printer xx EST ordinal of line printer	If desired, continue printing via DSD command CONTINUE (refer to section 3).
EQxx INITIALIZED.	IMS (dayfile message)	Informative message indicating that mass storage device xx has successfully been initialized. xx EST ordinal of device	None.
EQxx, NEEDS LABEL.	1MT (operator message)	Tape mounted on magnetic tape unit xx is unlabeled and job requires a labeled tape. On labeled multi-reel files, all subsequent reels must be labeled. EQ MT for 7-track; NT for 9-track xx EST ordinal of magnetic tape unit	Mount correct tape.
EQxx nnnn DIRECT ACCESS FILE ERRORS.	REC (dayfile message)	Number of direct access files on mass storage device xx that could not be recovered during mass storage device recovery (performed during deadstart or when a removable device is introduced into the system). The files in error are identified by LENGTH ERROR messages. In addition, the number of files in error (nnnn) should equal the number of LENGTH ERROR messages issued. xx EST ordinal of device nnnn Number of files in error	Inform site analyst; files should either be reloaded or redefined (refer to description of LENGTH ERROR message for additional information).

Message	Routine	Description	Action
EQxx nnnn PRESERVED FILES PURGED.	REC (dayfile message)	Number of direct access files that were purged on device xx during mass storage device recovery because system sector was not legal. This does not include those files purged because purge status was set in interlock information. Mass storage device recovery is performed during system deadstart or when a removable device is introduced into the system. xx EST ordinal of device nnnn Number of files	Inform site analyst; files that were purged (or the entire device) should be reloaded.
EQxx nnnn DIRECT ACCESS FILES RECOVERED.	REC (dayfile message)	Informative message indicating the number of direct access files that were successfully recovered on mass storage device xx. Mass storage device recovery is performed during system deadstart or when a removable device is introduced into the system. xx EST ordinal of device nnnn Number of files	None.
EQxx, nnnn PRINT ERRORS.	1CD (error log message)	Print errors detected on line printer xx. EQ One of the following equipment types: LP 512 or 580 line printer LQ 512 line printer LR 580 line printer xx EST ordinal of line printer nnnn Octal number of print errors	Inform customer engineer.
EQxx. NO PAPER.	1CD (operator message)	Line printer xx is out of paper. EQ One of the following equipment types: LP 512 or 580 line printer LQ 512 line printer LR 580 line printer xx EST ordinal of line printer	Correct paper condition.
EQxx. NOT READY.	1CD (operator message)	Local batch equipment xx is not ready. EQ One of the following equipment types: CP 415 card punch CR 405 card reader LP 512 or 580 line printer LQ 512 line printer LR 580 line printer xx EST ordinal of local batch equipment	Ready the equipment.

Message	Routine	Description	Action
EQxx. OFF.	ICD (operator message)	Local batch equipment xx has been logically turned off. EQ One of the following equipment types: CP 415 card punch CR 405 card reader LP 512 or 580 line printer LQ 512 line printer LR 580 line printer xx EST ordinal of local batch equipment	If desired, equipment may be turned on via DSD command ON (refer to section 3).
EQxx, RING CONFLICT.	1MT (operator message)	Ring status for tape mounted on magnetic tape unit xx conflicts with ring status requested by job. EQ MT for 7-track; NT for 9-track xx EST ordinal of magnetic tape unit	Correct ring status (insert or remove write ring) and remount tape.
EQ xx TRACK LIMIT.	PFM (error log message) PFU (dayfile message)	Mass storage device defined by EST ordinal xx has no allocatable tracks left and a program is waiting for a track in order to continue processing of a file. Additional space must be made available on the device.	Inform site analyst.
filename EQxx TRACK tttt LENGTH ERROR.	QREC (dayfile message)	Physical EOI of disk and logical EOI of TRT are not identical. filename Name of file in error xx EST ordinal of device tttt First track of file in error	Consult site analyst.
EQxx TRKnnnn SYSTEM SECTOR ERROR.	IMS (error log message)	IMS could not read the system sector at this location while performing maintenance on direct access files. xx EST ordinal of device nnnn Track number of system sector	Inform site analyst.
EQxx, WRONG VSN.	1MT (operator message)	Tape mounted on magnetic tape unit xx does not have the volume serial number (VSN) requested by job. EQ MT for 7-track; NT for 9-track xx EST ordinal of magnetic tape unit	Mount tape with correct VSN as shown on the resource mounting preview (E, P.) display.
EQ0 NOT MASS STORAGE.	SET (operator message)	Equipment defined in first entry of equipment status table (EST ordinal zero) is not a mass storage device. The system must be configured with EST ordinal zero as a non-removable mass storage device.	Correct configuration to specify EST ordinal zero as a mass storage device and rereadstart.
ERROR dbxx, location.	SET (operator message)	A disk error occurred during deadstart. dt Device type xx EST ordinal of device location Location of the error within the device. An error of this type could be: ERROR D102, C116, T17, S14.	To continue, either type GO (note that information being written to disk at this time may not be valid), or attempt another deadstart with the track locked out via use of the correct CMRDECK entries (such as RTK). If disk errors persist, consult a customer engineer.

Message	Routine	Description	Action
****ERROR IN ALPHABETIC DATA..	QFSP (operator message)	A K-display message indicating either no data is present or an illegal separator follows the data.	Correct and reenter K-display input.
ERROR IN CATALOG IMAGE ON	PFLOAD1 (dayfile message)	Image of device's catalog tracks was in error on the archive tape being loaded. This is a fatal system error; PFLOAD aborts.	Retry or use backup tape.
****ERROR IN DATE.	QFSP (operator message)	A K-display message indicating either the date entry is not in the correct format or an illegal separator follows the date.	Correct and reenter K-display input.
****ERROR IN DEVICE NUMBER.	QFSP (operator message)	A K-display message indicating one of the following: No family name has been specified. The device number is not in the specified family. An illegal separator follows the device number.	Correct and reenter K-display input.
****ERROR IN FAMILY NAME.	QFSP (operator message)	A K-display message indicating either the specified family cannot be found or an illegal separator follows the family name.	Correct and reenter K-display input.
****ERROR IN IDENTIFIER.	QFSP (operator message)	A K-display message indicating either an illegal directive or command has been entered, or a directive is illegal for the selected utility.	Correct and reenter K-display input.
****ERROR IN ID RANGE.	QFSP (operator message)	A K-display message indicating one of the following: ID is not in the range $0 < ID < 77g$. Illegal separator between or after ID data. Minimum ID is greater than the maximum ID.	Correct and reenter K-display input.
****ERROR IN NUMERIC DATA.	QFSP (operator message)	A K-display message indicating one of the following: No data is present. Non-numeric data was entered where numeric data was required. Numeric data exceeds maximum value.	Correct and reenter K-display input.
****ERROR IN SELECTED FILE TYPE.	QFSP (operator message)	A K-display message indicating either the file type selected cannot be recognized or an illegal separator follows the file type.	Correct and reenter K-display input.
****ERROR IN USER INDEX RANGE.	QFSP (operator message)	K-display message indicating one of the following: User index is not numeric data. User index is not within the range $0 < min < max < 377777B$ where min is the minimum user index and max is the maximum user index. An illegal separator follows the last user index.	Correct and reenter K-display input.

Message	Routine	Description	Action
ERROR ON ACTIVE DEVICES.	CMS (operator message)	Label checking has detected error on device with active files. Message indicates abnormal condition that should be corrected immediately (for example, wrong pack removed when interchanging devices).	Examine E,M display to determine type of error.
ERROR ON OUTPUT.	QREC (operator message)	K-display message indicating the OUT command was entered when no output file existed.	
EST/FNT LENGTHS CONFLICT, RECOVERY OF DEVICE IMPOSSIBLE.	REC (operator message)	Error was encountered during a recovery deadstart. This error occurred because the length of the FNT or EST of the system defined in CMRDECK conflicts with the system being recovered from disk.	Attempt another deadstart without recovery (level 0).
EXPORT ABORT - NO MUX OR BAD MUX.	1LS (dayfile message)	The Export driver was unable to obtain a satisfactory status response from an assigned multiplexer during initialization.	Inform site analyst.
EXPORT OVL OVCS BC . LT. ZERO.	1LS (dayfile message)	The buffer count for Export has become negative.	Inform site analyst.
EXPORT RUNNING.	1LS (dayfile message)	Informative message indicating that Export initialization has completed normally.	None.
EXTRACT ILLEGAL WITHOUT CIR.	PFLOAD1 (dayfile message)	Extract (E) option was specified for the load and the archive tape being used has no catalog image record (CIR). This is a fatal system error; PFLOAD aborts.	Rerun the utility using an archive tape having a CIR or else omit specification of E option.
FAMILY MASK NOT EQUAL TO 377	MSI (operator message)	The device mask for the family does not equal 377B.	Correct and enter GO or enter GO to override. This is the only input accepted at this time.
****FAMILY NAME MUST BE ENTERED.	QFSP (operator message)	A K-display message indicating a GO command has been entered before the family name (FM) or destination family (DF) has been specified.	Enter the missing family name and type GO.

Message	Routine	Description	Action
FAMILY/PACK NOT FOUND.	PFS (dayfile message)	Family or pack not defined in permanent file system.	Reenter parameters and specify correct pack or family name, or enter (mount) the correct family or pack into the system if not currently present.
FAST ATTACH FILES ON DEVICE.	IDS (dayfile message)	An attempt was made to initialize a mass storage device on which one or more fast attach files are currently active. This message also appears in the comment field of the system control point in the job status (B) display.	Inform site analyst; the fast attach files will have to be released, via ISF function, before the device can be initialized. The recommended procedure is as follows: 1. Examine the FNT (H) display to determine the names of the fast attach files on the device (typically, VALIDUS, PROFILA, or RESEXDF). 2. Release those files via ISF entries in the following format: X.ISF,R=filenam. If fast attach files are to be reloaded after the device is initialized, those files must be initialized via the following entry: X.ISF.
FET POINTERS OUT OF BOUNDS.	PFU (dayfile message)	An error has occurred during a transfer of data to or from a central memory circular buffer (out pointer is greater than the limit pointer). This error should not occur unless there is an error in the utility or someone is writing into the utilities field length.	Inform site analyst.
FILES IN ERROR REMAIN LOCAL. OPERATOR ACTION REQUIRED.	DMQ, LDQ (dayfile message)	One or more print files could not be dumped or loaded because the track chain for these files (in TRT) was found to be in error. The files in error are retained at the DMQ (or LDQ) control point as local files. Each print file that could not be dumped by DMQ is identified by the following dayfile message: filenam PR - NOT DUMPED.	Inform site analyst when ACTION message appears on the B display (refer to description of ACTION message for additional information).

Message	Routine	Description	Action
FILE NAME CONFLICT.	QREC (dayfile and operator message)	Print files that could not be loaded by LDQ are identified by the following dayfile message: filenam NOT RELEASED. When dumping or loading is complete, the message ACTION is flashed at the DMQ (or LDQ) control point on the job status (B) display. The file to receive output cannot be named IQF or NIQFT.	Enter new L directive.
FILENAME xxxxxxx USER INDEX yyyyyy	PFLOAD1 PFDUMP1 (operator message)	Informative message indicating name of file being loaded (or dumped) and user index under which the file is stored. xxxxxxx File name yyyyyy User index identification	None.
FILE TRUNCATED (filenam) (user index)	PFLOAD1 (dayfile message)	Data for file on archive tape is shorter than the length indicated in the catalog entry for the file. The file is truncated and the length in the catalog is updated to reflect the smaller size. This is a nonfatal system error.	Load the file from a backup tape if desired.
nnnn FILES ACTIVATED DNdn FM xxxxxxx.	QREC (dayfile message)	Indicates the number of files that have been activated on the specified device. nnnn Number of files dn Device number xxxxxxx Family name	None.
nnnn FILES DEQUEUED DNdn FM xxxxxxx.	QREC (dayfile message)	Indicates the number of files that have been dequeued on the specified device. nnnn Number of files dn Device number xxxxxxx Family name	None.
nnnn FILES IGNORED DNdn FM xxxxxxx.	QREC (dayfile message)	Indicates the number of queued files remaining inactive on the specified device. nnnn Number of files dn Device number xxxxxxx Family name	None.

Message	Routine	Description	Action
nnnn FILES PURGED DNdn FM xxxxxxx.	QREC (dayfile message)	Indicates the number of queued files which have been purged on the specified device. nnnn Number of files dn Device number xxxxxxx Family number	None.
FIRMWARE LOAD, PART NO.-12345678	1MT/3MA (error log message)	Informative message indicating that magnetic tape controller firmware has been loaded.	None.
FN OR PN MUST BE SPECIFIED	MSI (operator message)	Family or pack name must be entered to initialize device.	Enter the required family name, or pack name, then enter GO.
FNT THRESHOLD LIMIT.	QREC (dayfile and operator message)	The FNT threshold for requeuing of queue files has been reached.	Retry when system is not as busy.
FORMAT ERROR.	PFLOAD1 (operator message)	Error encountered on archive tape.	Ensure that correct archive tape (created by PFDUMP) is assigned.
FORMAT REQUIRES UNLABELED TAPE.	RESEX (dayfile message)	The format specified (F, E, B, or X) is valid only for unlabeled tapes.	The tape must be assigned either in a different format or as an unlabeled tape.

Message	Routine	Description	Action
GENERATING CATALOG IMAGE.	PFDUMP1 (operator message)	Informative message indicating that catalog image record (CIR) is currently being written to the archive file.	None.
HUNG PP.	MTR (operator message)	An illegal function has been attempted. The PPU becomes hung because MTR does not clear the output register.	The recommended procedure is as follows: <ol style="list-style-type: none"> 1. Perform a full dump to tape. 2. Attempt to redeadstart the system. 3. Retain dump tape to be examined by the site analyst.
IDLE.	IIO (operator message)	Informative message indicating that the BATCHIO subsystem is idle (no I/O buffers in use). This message appears at the BATCHIO control point on the DSD job status (B) display.	None.
ILLEGAL ACCOUNT/FAMILY.	ACCFAM (dayfile message)	May indicate that VALIDUS file is not present in system or that user has submitted an invalid user number or family name.	Examine the EST (E, A.) display to determine if the VALIDUS file is active in the system (VALIDUS is a fast attach file). If VALIDUS is active, no operator action is necessary; assume an illegal user number or family name was entered. However, if VALIDUS is not active it must be initialized (activated) via the following console entry: X.ISF.
ILLEGAL CATALOG TRACK COUNT.	PFLOAD1 (dayfile message)	Number of catalogs is not a power of two. This is a fatal system error; PFLOAD aborts.	Inform site analyst.

Message	Routine	Description	Action
ILLEGAL DEVICE TYPE.	SET/ICM (operator message)	Device type specified in CMRDECK entry was not found in the table of legal device types.	Redeasstart and correct CMRDECK entry.
ILLEGAL ENTRY	MSI/QFSP (operator message)	Input not allowed as entered.	Correct format of input line.
ILLEGAL FAMILY NAME.	ISF (dayfile message)	Family name specified in ISF entry is not defined in the running system.	Repeat ISF entry with correct family name.
ILLEGAL FILE NAME.	ISF (dayfile message)	File name specified in ISF entry (file to be initialized) was not available to the system. Valid file names include VALDUS , PROFILA, RESEXDF, RESEXVF, SYSPROC, and SYSJOB.	Repeat ISF entry with correct file name.
ILLEGAL FUNCTION.	PFS (operator message)	Illegal utility specified; PFS aborts.	Retry PFS entry with correct utility specified.
ILLEGAL IMS FUNCTION.	IMS (dayfile message)	Illegal function detected in call to IMS (could be caused by hardware parity error or logic error in program).	Inform site analyst.
ILLEGAL OPTION.	DMQ (dayfile message)	Parameter specified in DMQ entry was not recognized.	Check to ensure that parameters are valid and retry DMQ entry.
ILLEGAL PAGING ATTEMPT.	QREC (operator message)	K-display message indicating the page advancing command (+) was entered before a LIST command or after a GO command.	
ILLEGAL QUEUE.	DMQ (dayfile message)	DMQ tried to dump a non-queue type file; a parity error is the probable cause of this error.	Make another attempt to dump files; if problem persists, inform site analyst.
ILLEGAL QUEUE TYPE.	LDQ (dayfile message)	Queue type indicated for file to be loaded was not input (IN), print (PR), or punch (PH); a parity error is the probable cause for this error.	Make another attempt to load files; if problem persists, inform site analyst.
ILLEGAL SLL REQUEST.	SLL (dayfile message)	SYSEEDIT called SLL with an undefined function code.	Inform site analyst.

Message	Routine	Description	Action
ILLEGAL TERMINAL REQUEST.	TLX (dayfile message)	Informative message indicating that an unidentified request was encountered, the request was not from a terminal job, or auto recall was not requested by the calling job.	None.
***ILLEGAL ENTRY.	QFSP (operator message)	A K-display message indicating the processor could not recognize the specified utility option.	Correct and reenter K-display input.
INDIRECT TOO LONG (filename) *user index*	PFDUMP1 (dayfile message)	Indirect access file (filenam) is too long and is automatically truncated. The length will be corrected in the catalog entry when it is reloaded. This is a nonfatal system error.	Inform site analyst.
INDIRECT TOO SHORT *filenam* *user index*	PFDUMP1 (dayfile message)	Indirect access file (filenam) is too short and is automatically padded with EOF marks. When the file is reloaded, EOF marks added during dump will be deleted and length will be corrected in catalog entry. This is a nonfatal system error.	Inform site analyst.
INITIALIZATION IN PROGRESS.	PFDUMP1 (dayfile message)	Cannot access device because it is going to be initialized. This is a fatal system error; PFDUMP aborts.	Retry PFDUMP operation after initialization of device completes.
INITIALIZE BIT NOT SET ON EQxx	MSI (operator message)	Device specified by xx is available and has a good label but cannot be linked to another device unless initialize status is set. xx EST ordinal of device to be included in multispindle chain	<ol style="list-style-type: none"> 1. Enter INITIALIZE command to set initialize status for device, then enter RERUN to update list (on K display) of devices with initialize status set, or 2. Enter CLEAR to clear initialize status for current device.
INSUFFICIENT STORAGE FOR PF INITIAL- IZATION.	IMS (dayfile message)	Mass storage device specified cannot be initialized at this time because the space required to reserve the catalog and permit tracks is insufficient. Space is not available because jobs are using tracks on the device for scratch files.	Examine the EST (E, A.) display and wait for the number of available tracks to increase; then retry initialization procedure.
INTERNAL ERROR IN MSI	MSI (dayfile message)	MSI encountered an internal condition which could destroy permanent files.	Inform site analyst.
I/O SEQUENCE ERROR.	PFU (dayfile message)	Operation requested on a file before previous operation completed. This error should not occur unless there is an error in the utility processor.	Inform site analyst.

Message	Routine	Description	Action
ISF COMPLETE.	ISF (dayfile message)	Informative message indicating that ISF (initialize system files) operation completed.	None.
JOB(S) HUNG.	TELEX2 (operator message)	Informative message indicating that TELEX has encountered some time-sharing origin (TXOT) jobs at control points and is attempting to roll them out. This message is displayed only for a short period of time.	None.
****JOBNAME LIST FULL.	QFSP (operator message)	A K-display message indicating the jobname list does not have room for the specified jobname. The jobname list may have up to five jobnames entered.	None.
LABEL BAD.	PFLOAD1 (operator message)	Bad utility label (created by PFDUMP) was encountered while reading multiple archive files from an archive tape.	Ensure that correct archive tape is assigned and that file skipping and file count options are correct.
LENGTH ERROR filename user index	REC (dayfile message)	Interlock data in system sector of direct access file (filename) indicates that file was in WRITE mode and the last sector of file (specified by TRT) was not an EOI sector. The file interlock data is cleared and the file is left intact on the device. filename Name of file on which error was encountered user index User index identification	Inform site analyst; files should either be reloaded or redefined.
LIBRARY TABLE ERROR.	SLL (dayfile message)	Error encountered while building system library. Blank entry was not found in the library table or in the directory within the field length at the deadstart control point.	Attempt another deadstart. If the problem persists, inform site analyst.
LIST COMPLETE.	QREC (operator message)	Informative message on the K-display indicating the LIST command has completed.	None.
LOADING (filename) (user index)	PFLOAD1 (operator message)	Informative message indicating name of file (filename) currently being loaded and associated user index.	None.
LOADING - DIRECT ACCESS FILES ONLY.	PFLOAD1 (operator message)	Informative message indicating that only direct access files have been selected to be loaded (OP=D option specified).	None.
LOADING FROM xxx TO yyy.	PFLOAD1 (operator message)	Informative message indicating which device the files being loaded came from and the device to which they are being loaded. xxx Device mask of the device that was dumped to the archive tape being loaded yyy Device mask of the device to be loaded	None.

Message	Routine	Description	Action
LOADING - INDIRECT ACCESS FILES ONLY.	PFLOAD1 (operator message)	Informative message indicating that only indirect access files have been selected to be loaded (OP=I option specified).	None.
LPxx, . . .		Refer to the EQxx, . . . series of corresponding messages for full descriptions of messages beginning with LPxx.	
LQxx, . . .		Refer to the EQxx, . . . series of corresponding messages for full descriptions of messages beginning with LQxx.	
LRxx, . . .		Refer to the EQxx, . . . series of corresponding messages for full description of messages beginning with LRxx.	
MAGNET NOT ACTIVE.	RESEX (dayfile message)	Resource execution error was encountered. This error occurred because the magnetic tape subsystem (MAGNET) was not active when attempting CPU monitor function requests RSB (read subsystem program block) or SIO (send intercontrol point block to subsystem program).	Enter DSD command n. MAGNET. to activate the magnetic tape subsystem at control point n.
MASS STORAGE TABLE OVERFLOW.	SET/1CM (operator message)	The computed address of the MST (mass storage table) is not less than 100000B and cannot be placed in byte 4 of an EST (equipment status table) entry.	Inform site analyst.
MASS STORAGE TOO SMALL FOR SYSTEM.	SLL (dayfile message)	Error encountered while building system library. Storage required not available on mass storage device specified for system library.	Attempt another deadstart using a larger system mass storage device or use a deadstart tape that generates a smaller system library.

Message	Routine	Description	Action
MDxx, Cyy, ec, ann, Sttt, FNqqqq-r. or MDxx, Cyy, ec, ann, Sttt, Ux Cxxxx Sxxxx.	6MD (operator, error log, and dayfile message)	An error has been detected on mass storage device xx. The nature of the error is determined by examining each parameter in the message. xx EST ordinal of 841 disk yy Channel number ec Error code - one of following: PE - Parity error/checkword error AD - Address error ST - Device status error FN - Function reject for any device con- nected to data channel converter (6681), or function timed out with no response RS - Device reserved NR - Device not ready a Type of operation - one of following: R - Read W - Write nn Retry count - error is considered irrecover- able after following number of retries: PE - 10 AD - 10 ST - 64 FN - 10 RS - indefinite NR - indefinite ttt Device status - implies there was an incomplete transfer if status does not indicate an error Function rejected qqqq Data channel converter (6681) status - if present r Physical unit Ux Upper address } Physical address Cxxxx Lower address } Sxxxx	Dump error log dayfile to printer (refer to description of ERRLOG,xx. command) and make it available to the customer engineer and/or site analyst.
MISSING EOR.	PFLOAD1 (dayfile message)	Logical EOR missing on file being loaded (invalid data). File is truncated and length of file is updated in catalog. This mes- sage is followed by the message TAPE ERROR (filenam) (user index).	Retry or use backup tape.
MODIFIED AFTER yy/mm/dd. hh.mm.ss	PFLOAD1 PFDUMP1 (operator message)	Informative message indicating that files modified after the specified date and time have been loaded (or dumped).	None.

Message	Routine	Description	Action
MSI ABORTED INITIALIZE MAY NOT BE COMPLETE	MSI (dayfile message)	Initialization of mass storage device did not complete due to hardware/software failure.	Inform site analyst.
MORE THAN 4 TAPE CHANNELS.	1MT (dayfile message)	There are currently more than four channels defined in the system for magnetic tape equipment.	Inform site analyst.
MT.....		Refer to the EQ.... series of corresponding messages for full description of messages beginning with MT.	
MTS FIRMWARE NOT FOUND.	1MT (dayfile message)	Magnetic tape controller firmware is not in the system.	Inform site analyst.
NC IS NOT A POWER OF 2	MSI (operator message)	The number of catalog tracks specified must be a power of two.	Correct and enter GO.
NETWORK CARDS IGNORED.	TELEX (dayfile message)	A communications multiplexer defined in the NETWORK file was not found.	Inform site analyst.
NO DATA BLOCK.	PFLOAD1 (dayfile message)	DATA control word was not found when expecting data for current file; length is set to zero. This is a nonfatal system error and is followed by the message TAPE ERROR (filenam) (user index).	Retry or use backup tape.
NO DEVICE SPECIFIED.	PFU (dayfile message)	Device number specified was zero or was lost before call to utility processor. Note that if a user index is specified, the utility will automatically determine the device number.	Retry and specify the device number of a user index.

Message	Routine	Description	Action
NO EOI FOR FILE.	PFLOAD1 (dayfile message)	Next catalog was found before EOI was detected for the current file. Length is updated in catalog entry. This is a nonfatal system error and is followed by the message TAPE ERROR (filenam) (user index).	Retry or use backup tape.
NO EQUIPMENT.	1TD (dayfile message)	No communications multiplexer has been defined in the equipment status table (EST).	Inform site analyst.
NO EQUIPMENT AVAILABLE.	1IO (dayfile message)	Driver routine for local batch equipment determined that no equipment (card reader, card punch, and/or line printer) is defined in system.	Inform site analyst; system must be deadstarted in order to define equipment in EST.
NO EXCEEDS 200B TRACKS	MSI (operator message)	The number of catalog tracks specified for device exceeds the limit allowed.	Correct and enter GO.
NO FILES DUMPED.	DMQ (dayfile message)	Informative message indicating that no files of the queue type specified were dumped.	None.
NO FILES PROCESSED.	PFLOAD1 PFDUMP1 (operator message)	Informative message indicating that no files have been loaded (or dumped) during the utility run.	Rerun the specified utility.
NO INACTIVE QUEUES PRESENT.	QREC (dayfile and operator message)	When processing a LIST command, no inactive queues were found.	None.
NO INITIALIZE REQUESTS SET FOR MSI	MSI (dayfile message)	MSI was called by some means other than the INITIALIZE command (for example, X.MSI.), and initialize status is not currently set for any mass storage devices.	None.
NO JOBS IN SYSTEM.	TELEX2 (dayfile message)	Informative message indicating that TELEX has successfully deactivated all terminal-originated activities that were in the system.	None.
NO OUTPUT FILE EXISTING.	DFTERM (operator message)	K-display message indicating no output file was created before the OUT command was entered.	Create output file with LIST command.
NO PF DEVICE IN EST.	PFLOAD1 PFDUMP1 (dayfile message)	No permanent file device is specified in the equipment status table (EST). This is a fatal system error; PFLOAD (or PFDUMP) aborts.	Inform site analyst; system must be deadstarted in order to define a mass storage permanent file (PF) device in the EST.

Message	Routine	Description	Action
NO SYSTEM DEVICE DEFINED.	SET/ICM (operator message)	The mass storage device on which the system is to be loaded has not been defined.	Define system device with SYSTEM=n command or redeadstart and specify a system device with bits 0 through 5 of word 14 on the deadstart panel.
NO TAPE EQUIPMENT.	IMT/3MA (dayfile message)	There is no magnetic tape equipment currently defined in the system.	Inform site analyst.
NO USER INDEXES ON TAPE MATCH DEVICE MASK.	PFLOAD1 (dayfile message)	The archive tape being processed has no files that reside on the device being loaded. This is a fatal system error; PFLOAD aborts.	Ensure that correct archive tape is being used and retry.
NO 667x MULTIPLEXER.	1TD (dayfile message)	Either the multiplexer defined in the equipment status table (EST) failed to respond to initialization status check, or no multiplexer is on channel.	Inform site analyst or customer engineer.
NOT ALL EQUIPMENT SERVICABLE.	1IO (dayfile message)	Number of local batch devices defined in the system (card readers, card punches, and line printers) exceeds maximum of 24B allowed.	Inform site analyst.
NOT AUXILIARY PACK	MSI (operator message)	An attempt was made to define a nonauxiliary device as a private pack.	Correct and enter GO.
filenam NOT RELEASED.	LDQ (dayfile message)	Print file (filenam) cannot be loaded because track chain for file (in TRT) was found to be in error. The file remains at the control point as a local file. When LDQ processing is complete, the message ACTION is flashed at the LDQ control point on the job status (B) display.	Inform site analyst when ACTION message appears on the B display (refer to description of ACTION message for additional information)
NOT SYSTEM JOB.	PFU (dayfile message)	Calling program is not system origin or does not have system origin privileges with console in DEBUG mode.	If utility is running as a nonsystem job with system origin privileges, ensure that console is in DEBUG mode (DEBUG is a DSD command).
NP GREATER THAN 8	MSI (operator message)	Number of packs specified for multispindle device cannot exceed eight.	Enter correct number of packs, then enter GO.
NP NOT ALLOWED	MSI (operator message)	The NP parameter (number of packs) was specified and the device to be initialized is not a pack type device.	Correct and enter GO.

Message	Routine	Description	Action
NT....		Refer to the EQ.... series of corresponding messages for full descriptions of messages beginning with NT.	
ON LINE xx. LOG IN xx. ACTIVE xx.	DSD (operator message)	Informative message indicating activity at EXPORTLS control point. This message appears at the EXPORTLS control point on the DSD job status (B) display.	None.
OPERATOR DROP.	PFU (dayfile message)	Informative message indicating that the operator has dropped the job. Probable cause for dropping the job was that PFU was unable to clear the utility interlock. Note that the site analyst should be informed before the job is dropped.	None.
OUTPUT FILE BAD.	REC (dayfile message)	System sector of output file is in error; file is purged.	None.
OUTPUT FILE RELEASED.	DFTERM (operator message)	Informative message on K-display indicating output file was released to the printer.	None.
OUTPUT FILE RELEASED.	QREC (operator message)	An informative message on the K-display indicating the OUT command has completed.	None.
OVERCOMMITMENT ALGORITHM ERROR.	RESEX (dayfile message)	Resource execution error was encountered; overcommitment algorithm has failed internally. This could occur when no equipment is available to honor a request.	Inform site analyst.
PACKNAME (packnam) LOADED.	PFLOAD1 (operator message)	Informative message indicating auxiliary device, identified by (packnam), has been loaded.	None.
PAGING COMPLETE.	QREC (operator message)	Informative message on the K-display indicating page advancing command (+) has completed.	None.
PARITY ERR (filenam) (user index).	PFLOAD1 (dayfile message)	Parity error was encountered on tape while loading file (filenam); file is skipped. This is a nonfatal system error.	Same situation as NO DATA BLOCK depending upon when error was encountered. Retry or use backup tape.
PARITY ERROR IN CATALOG IMAGE RECORD.	PFLOAD1 (dayfile message)	Parity error was detected while reading the image of the catalog tracks for the device to be loaded from the archive tape.	Retry or use backup tape.
PERMANENT DAYFILE LIST COMPLETE.	DFTERM (operator message)	K-display message indicating the permanent dayfile list has written to output for DFLIST or to the K display buffer for DFTERM.	None.

Message	Routine	Description	Action
PERM. FILE LINKAGE ERROR RECOVERY OF DEVICE IMPOSSIBLE.	RMS (operator message)	Attempt to edit track reservation table (TRT) on mass storage device, during level 0 (initial) deadstart, was unsuccessful. The TRT is edited to remove all non-permanent file chains.	Enter GO to initialize device with parameters defined in label; permanent files on device are lost.
PERMIT RI RANGE ERR (filenam) (user index)	PFDUMP1 (dayfile message)	Random index of the permit information for file (filenam) is not within the legal range. This is a nonfatal system error.	Inform site analyst.
PERMITS MISSING.	PFLOAD1 (dayfile message)	Permit information on archive tape is missing or incomplete. This is a nonfatal system error and is followed by the message TAPE ERROR (filenam) (user index).	Retry or use backup tape.
PERMITS PRESENT THAT SHOULD NOT BE.	PFLOAD1 (dayfile message)	Permit block found on tape but no previous permit random index was found in the catalog. Data is considered invalid and the file is skipped. This is a nonfatal system error and is followed by the message TAPE ERROR (filenam) (user index).	Retry or use backup tape.
P. F. DEVICE (dn) DUMPED.	PFDUMP1 (operator message)	Informative message indicating that dumping of permanent files from the specified device is complete. dn Device number	None.
P. F. DEVICE (dn) LOADED.	PFLOAD1 (operator message)	Informative message indicating that loading of permanent file device identified by (dn) is complete. dn Device number	None.
PF SPECIFIED BUT UI NOT.	PFS (dayfile message)	User index associated with permanent file name specified is required and was not entered.	Reenter parameters and specify both filename and user index.
PFDUMP yy/mm/dd. hh.mm.ss.	PFDUMP1 (operator message)	Informative message indicating data and time of dump.	None.
PFDUMP DEVICE (dn) FAMILY (fy).	PFDUMP1 (operator message)	Informative message indicating family device currently being dumped. dn Device number fy Family name	None.

Message	Routine	Description	Action
PFDUMP DEVICE MASK xxx	PFDUMP1 (operator message)	Informative message indicating device mask (xxx) of device currently being dumped.	None.
PFDUMP DEVICE (dn) PACK (pk).	PFDUMP1 (operator message)	Informative message indicating auxiliary device currently being dumped. dn Device number pk Packname	None.
PFLOAD ABORTED.	PFLOAD1 (dayfile message)	A fatal system error occurred causing PFLOAD to abort.	Check dayfile for other error messages to aid in determining the cause of this error.
PFLOAD DEVICE (dn) FAMILY (fy)	PFLOAD1 (operator message)	Informative message identifying the device being loaded and the family name associated with that device. dn Device number fy Family name	None.
PFLOAD DEVICE (dn) PACK (pk)	PFLOAD1 (operator message)	Informative message identifying the packname of the auxiliary device being loaded. The device number will always be zero. dn Device number (always zero) pk Packname.	None.
PFM ABORTED.	PFM (error log message)	Error flag detected at PFM control point; PFM aborts.	Rerun job or inform site analyst if reason for abort is not apparent.
PFU - PARAMETER ERROR.	PFU (dayfile message)	The program calling PFU has an error in the calling parameters. This should not occur unless there is an error in the utility or a nonutility program is calling PFU. Nonutility programs call PFU at their own risk.	Inform site analyst.
POINTER RRROR - RECOVERY IMPOSSIBLE	TELEX2 (dayfile message)	TELEX has encountered incorrect internal pointers during recovery. These pointers could be the terminal table pointer or the pot pointer. Recovery terminates and reloading is attempted.	Restart TELEX.

Message	Routine	Description	Action
PP HUNG.	CPUMTR (operator message)	One or more PPUs have attempted to perform an illegal operation. The PPU becomes hung because CPUMTR does not clear the output register.	The recommended procedure is as follows: 1. Perform an express deadstart dump. 2. Attempt to redeadstart the system. 3. Retain dump tape for site analyst.
PP MEMORY PARITY ERROR.	1MB (operator message)	One or more PPUs have encountered a PP memory parity error and have stopped execution at the failing memory location. The PPU may be identified in the error log dayfile.	Inform customer engineer. Redeadstart is necessary.
filenam PR - NOT DUMPED.	DMQ (dayfile message)	Print file (filenam) could not be dumped because track chain for file (in TRT) was found to be in error. The file remains at the control point as a local file. When DMQ processing is complete, the message ACTION is flashed at the DMQ control point on the job status (B) display.	Inform site analyst when ACTION message appears on the B display (refer to description of ACTION message for additional information).
QUEUED FILES LOST.	QREC (dayfile message)	Files which process error conditions were not requeued. This error should never occur but may if QREC was aborted and could not modify its files correctly.	A level 0 deadstart is necessary to recover the queues.
QUEUES UNRECOVERABLE THIS DEVICE.	QREC (dayfile message)	This message is issued in conjunction with the mass storage error message DNdn FM xxxxxxx MS ERROR. Refer to that message for the appropriate device information.	None.
QREC/QLIST ABORTED. QUEUE STATUS INDEFINITE.	QREC (dayfile message)	These messages occur if QREC aborts for any reason.	A level 0 deadstart may be needed to recover lost queued files.
RANDOM ADDRESS ERROR.	SLL (dayfile message)	Error encountered while building system library. Random address is not on file.	Attempt another deadstart. If the error persists and system has worked previously, call a customer engineer and test memory and RMS.
READING (filenam) (user index).	PFLOAD1 (operator message)	Informative message indicating which file is currently being read from the archive tape.	None.
RECORD NOT FOUND.	SYSEDT (operator message)	Error encountered while building system library. An attempt was made to place a nonexistent routine on an alternate system device. Deadstart processing halts when this error is detected.	Attempt another deadstart. If the error persists, inform the site analyst.
dt-n RECOVERED DNyy FNaaaaaa.	CMS (dayfile message)	Informative message indicating that device number yy for family aaaaaa has been recovered as device type dt-n.	None.
dt-n RECOVERED PNaaaaaa.	CMS (dayfile message)	Informative message indicating that auxiliary device aaaaaa has been recovered as device type dt-n.	None.
RECOVERING PF EQxx. TRK nnnn.	REC (operator message)	Informative message indicating that direct access files on the specified logical track of mass storage device xx are being recovered. xx EST ordinal of device nnnn Logical track number	None.

Message	Routine	Description	Action
RECOVERY, dtxx.	RMS (operator message)	Informative message indicating mass storage device being recovered during system deadstart. dt Device type xx EST ordinal of device	None.
RECOVERY COMPLETE.	REC (operator message)	Informative message issued during deadstart; indicates end of REC processing and start of system loading, or recovery, depending upon level of deadstart selected.	None.
RECOVERY COMPLETE.	TELEX2 (dayfile message)	Informative message indicating that TELEX has successfully completed the selected form of recovery.	None.
RECOVERY IMPOSSIBLE EQxx EQyy CONFLICTING DN.	RMS (operator message)	Two devices in the same family have the same device number and the system library resides on one of them. xx and yy are the EST ordinals of these devices.	Inform site analyst; recommended action is: 1. Remove one of the specified devices and redeadstart, or 2. Redeadstart and logically turn off one of the specified devices (via CMRDECK entry).
RECOVERY IMPOSSIBLE EQxx EQyy CONFLICTING PN.	RMS (operator message)	Two auxiliary devices have the same packname, and the system library resides on one of them.	Inform site analyst; recommended action is: 1. Remove one of the specified devices and redeadstart, or 2. Redeadstart and logically turn off one of the specified devices (via CMRDECK entry).
RECOVERY IMPOSSIBLE EQxx EQyy CONFLICTING UM.	RMS (operator message)	Two devices in the same family have the same bits set in the device mask, and the system library resides on one of them. xx and yy are the EST ordinals of these devices.	Inform site analyst; recommended action is: 1. Remove one of the specified devices and redeadstart, or 2. Redeadstart and logically turn off one of the specified devices (via CMRDECK entry).
RECOVERY IMPOSSIBLE ERROR ON DEVICE WITH ACTIVE FILES.	RMS (operator message)	Issued during level 1, 2, or 3 recovery deadstart if label on mass storage device cannot be verified and active files are on the device.	Attempt another deadstart with no recovery (level 0).

Message	Routine	Description	Action													
RECOVERY IMPOSSIBLE LENGTH OF DEVICES TRT BAD.	RMS (operator message)	Reading track reservation table (TRT) into central memory from mass storage during level 0, 1, or 2 deadstart was unsuccessful.	If error occurred during level 1 or level 2 recovery deadstart, perform level 0 (initial) deadstart. If error occurred during level 0 deadstart, enter GO to initialize device with parameters defined in label; permanent files on device are lost.													
RECOVERY IN PROGRESS.	TELEX2 (dayfile message)	Informative message indicating that TELEX has begun recovery procedures due to an abort or termination condition.	None.													
REQUEST xxxxxxx, eq	LFM (operator message)	Job is requesting that equipment type eq be assigned to file xxxxxxx.	Assign equipment to control point.													
REQUEST DISPLAY. (xxx).	DIS, O26 (operator message)	Program (xxx) is waiting for the display to be assigned. This message appears in the comment field of the control point at which the program is active on the job status (B) display. <table style="margin-left: 40px; border: none;"> <tr> <td>xxx</td> <td>O26</td> <td>File editor</td> </tr> <tr> <td></td> <td>DIS</td> <td>Job display routine</td> </tr> <tr> <td></td> <td>name</td> <td>Program name</td> </tr> </table>	xxx	O26	File editor		DIS	Job display routine		name	Program name	Enter DSD command: n. ASSIGN, xx. <table style="margin-left: 40px; border: none;"> <tr> <td>n</td> <td>Control point number requesting assignment</td> </tr> <tr> <td>xx</td> <td>EST ordinal of the display console</td> </tr> </table>	n	Control point number requesting assignment	xx	EST ordinal of the display console
xxx	O26	File editor														
	DIS	Job display routine														
	name	Program name														
n	Control point number requesting assignment															
xx	EST ordinal of the display console															
REQUEST *K* DISPLAY.	PF Utilities, MSI, STAGE, MODVAL, PROFILE (operator message)	The K display is requested at the specified control point. This message appears in the comment field of a control point on the job status (B) display.	Enter command K, n. <table style="margin-left: 40px; border: none;"> <tr> <td>n</td> <td>Control point number</td> </tr> </table>	n	Control point number											
n	Control point number															
REQUESTED FILE NOT AVAILABLE.	PFU (dayfile message)	Entry for file requested was not found in the FNT (file name table).	Inform site analyst.													
RESEX FAILURE.	PFM (error log message)	The resource executive (RESEX) has encountered a fatal error.	Inform site analyst.													

Message	Routine	Description	Action
RESOURCE ENVIRONMENT ERROR.	RESEX (dayfile message)	Resource execution error was encountered. Possible mass storage table (MST), unit descriptor table (UDT), or equipment status table (EST) errors caused the failure when building internal resource environment.	Inform site analyst.
RESOURCE PF ERROR nn filenam.	RESEX (dayfile message)	Resource execution error was encountered. PFM error nn was detected on the specified file (filenam) when attaching the resource file.	Inform site analyst.
ROLLIN FILE BAD.	1RI (dayfile message)	Illegal format detected in roll-in file.	Inform site analyst; a common file (**BAD) is created and left in the system for evaluation.
ROLLOUT FILE BAD.	1TA (dayfile message)	Detected system sector on a rollout file which did not meet one of the following conditions: 1. Linkage bytes must be 377 and 77 2. File type must be ROFT (rollout) 3. Job origin must be TXOT (TELEX)	Inform site analyst.
SR-m-2 yyyy yyyy yyyy yyyy yyyy. SR-m-1 yyyy yyyy yyyy yyyy yyyy yyyy. SR-m-0 yyyy yyyy yyyy yyyy yyyy yyyy.	1MB (error log message)	A status/control register error has been detected. m Channel register 0 Channel 16 register 1 Channel 36 register (if 20 PPU's are being used; in this case the contents of both registers are given) yyy...yyy Contents in octal of words 16 through 0 as specified below: SR-m-2 words 16-12 (bits 203-144) SR-m-1 words 11-6 (bits 143-72) SR-m-0 words 5-0 (bits 71-0)	Inform customer engineer.
SR-0-2 yyyy yyyy yyyy yyyy yyyy TCxxxx. SR-0-1 yyyy yyyy yyyy yyyy yyyy yyyy. SR-0-0 yyyy yyyy yyyy yyyy yyyy yyyy.	1MB (error log message)	Same as previous status/control register error message except that the SECDED Threshold Count xxxx has been reached. xxxx Threshold count as specified in DELAY command (section 3)	Inform customer engineer if two or more error bits are set (Bits 0-39 are the error bits).
SR, yyyy SINGLE SECDED ERRORS.	1MB (error log message)	Informative message indicating the number of SECDED single bit error corrections that have been detected. This message is issued only if an error was detected and the threshold count was not reached prior to the expiration of a time interval (assembly constant of approximately 1 hour). The time is checked whenever an error is detected, not on a continuous basis.	None.

Message	Routine	Description	Action
STxx, FNyy, FUNCTION TIMEOUT.	1ED (dayfile and error log message)	The driver routine (1ED) issued a function to the multiplexer and did not receive an inactive signal within four major cycles. This error causes the subsystem to abort. xx EST ordinal of multiplexer yy Function	Inform customer engineer.
STxx, INCOMPLETE TRANSFER.	1ED (dayfile and error log message)	The driver routine (1ED) failed to transfer the expected amount of data during an input or output operation. This error causes EXPORT to abort. xx EST ordinal of multiplexer	Inform customer engineer.
STATUS ERR (filenam) (user index)	PFLOAD1 PFDUMP1 (dayfile message)	Device on which direct access file (filenam) is to be loaded is not available; file is skipped. This is a non-fatal system error.	Make device available and retry.
SYSTEM ABORT	1AJ (dayfile message)	A system error was encountered. Possible errors include detection of a bad rollout file by IRT, an unrecognizable error flag, and an SSJ= block outside a field length.	Inform site analyst.
SYSTEM ACTIVITY PROHIBITS LIBRARY CHANGE.	SLL (dayfile message)	Error occurred because job at control point 1 cannot be moved in order to perform the sysedit (it is necessary to move the job at control point 1 to perform the sysedit).	Inform site analyst; recommended action is: 1. Drop activity at control point 1, or 2. Reduce size of central memory (CM) resident to allow building of tables within the allocated field length.
SYSTEM ERROR.	RESEX (dayfile message)	Resource execution error was encountered while attempting CPU monitor function requests RSB (read subsystem program block) or SIC (send intercontrol point block to subsystem program).	Inform site analyst.
SYSTEM FILE DESTROYED.	SLL (dayfile message)	System sector of system file is bad.	Inform site analyst; redeadstart is necessary.

Message	Routine	Description	Action
SYSTEM FILE FORMAT ERROR.	SET (operator message)	Text defined by deadstart parameters (or in CMRDECK) does not exist on the deadstart tape. This message may occur during the initialization phase of deadstart.	Inform site analyst; deadstart information must be redefined in the CMRDECK.
SYSTEM FILE RESERVED.	SLL (dayfile message)	System file currently in use, possibly by another copy of SYSEDIT.	Wait until other sysedit activity has completed and retry.
SYSTEM LIBRARY CHANGE ILLEGAL.	SLL (dayfile message)	Informative message indicating that caller does not have permission to modify the system.	None.
SYSTEM TABLE FILE DESTROYED. RECOVERY OF DEVICE IMPOSSIBLE.	REC (operator message)	Error was encountered during a recovery deadstart. The system file being recovered from disk was destroyed; recovery is impossible.	Attempt another deadstart without recovery (level 0).
SYSTEM TAPE PARITY ERROR.	STL (operator message)	Parity error occurred while reading the deadstart tape.	Perform one of the following: 1. To continue, type GO (note that information transferred may not be valid). 2. Redeadstart and specify a different tape density, or use another tape unit or a different deadstart tape.
TAPE ERROR (filenam) (user index)	PFLOAD1 (dayfile message)	Error encountered on tape while loading file (filenam); file is skipped. This is a nonfatal system error and is similar to the PARITY ERR (filenam) (user index) message in that the data read from the archive tape is not logically sound.	Inform site analyst.
TAPE LABEL ID ERROR.	PFLOAD1 (operator message)	PFDUMP identification not found in label. That is, the archive tape being used is not a permanent file dump tape.	Ensure that an archive tape created by PFDUMP is assigned.
TAPE PARITY ERROR.	PFLOAD1 (dayfile message)	Parity error encountered while attempting to load a file. Tape is skipped to next EOR mark. This is a nonfatal system error and is similar to the PARITY ERR (filenam) (user index) message except that the file name and user index are not known.	Try backup tape or inform site analyst.

Message	Routine	Description	Action
TELEX ABNORMAL - xxx, nnnnnn.	TELEX (dayfile message)	Informative message indicating that TELEX has encountered an abnormal situation. If sense switch 3 is set, TELEX attempts to enter active users into the recovery state, abort, and then reloads automatically. xxx TELEX routine requesting the abort nnnnnn Contents of the B2 register (usually contains a terminal number)	None.
TELEX INITIALIZATION ABORT.	TELEX (dayfile message)	One or more jobs of multiterminal or TELEX origin were not cleared from system queues before TELEX initialization. This situation should not exist because TELEX normally clears all jobs of these types when terminated. If the terminal configuration (EST entries) has been changed since termination, it is impossible to reload TELEX and recover users. This restriction is necessary because users are identified on the recovery file by a port number.	Restart TELEX (via DSD command TELEX.).
TELEX TERMINATE.	TELEX2 (dayfile message)	Informative message indicating that TELEX was stopped and was not restarted. This message is issued when TELEX is dropped (via 1.STOP. command).	None.
TERMINAL nnn, JOB LOST.	TELEX2 (dayfile message)	Informative message indicating that an abnormal situation has occurred during TELEX recovery. An attempt is made to terminate a job from the system because the active user logged in at terminal nnn cannot locate the job. Recovery continues, but that user will be unable to recover.	None.
TRACK BUFFER FULL.	SET (operator message)	Too many reserved track entries in CMRDECK. No more entries will be accepted.	Inform site analyst.
TTxx, FNyy, FUNCTION TIMEOUT.	1TD (dayfile and error log message)	The driver routine (1TD) issued a function to the multiplexer and did not receive an inactive signal within four major cycles. This error causes the subsystem to abort. xx EST ordinal or multiplexer yy Function	Inform customer engineer.
TY NOT ALLOWED	MSI (operator message)	Value specified for TY parameter was not valid (legal values are N, I, D, or X).	Correct and enter GO.
TOO MANY PORTS.	1TD (dayfile message)	More than 512 ports have been defined in the multiplexer entries of the equipment status table (EST).	Inform site analyst
UN MUST BE SPECIFIED	MSI (operator message)	Auxiliary device is defined as private. Thus, user number must be specified or the device must be redefined as public.	Specify user number or enter UN=NULL to indicate that private device is being made public.

Message	Routine	Description	Action
UNRECOVERED PARITY ERROR - ENTER K.GO TO CONTINUE. K.END TO ABORT.	PFDUMP1 (operator message)	An irrecoverable parity error was encountered on archive tape during PFDUMP operations. This is a nonfatal system error.	Described in message.
USER DOES NOT RESIDE ON MASTER DEVICE.	PFDUMP1 (dayfile message)	User index specified does not reside on device specified. This is a fatal system error; PFDUMP aborts.	Retry PFDUMP operation and either specify the correct device for the user index or do not specify the device number.
USER INDEX NOT ON DEVICE.	PFLOAD1 (dayfile message)	Permanent files for the user index currently being loaded do not reside on the device being loaded.	Retry load and specify the correct combination of user index and device number.
USER NUMBER INVALID.	PFS (dayfile message)	User number cannot be converted to user index correctly.	Reenter parameters and specify correct user number, or request site analyst to create a new user number.
VSN FILE ERROR.	RESEX (dayfile message)	The vsn file entry does not match the job identification.	Inform site analyst.
WAIT FNT SPACE.	0BF (operator message)	0BF (begin file routine) is waiting for a free entry in the file name table (FNT).	Inform site analyst; it may be necessary to drop a file that is not currently being used (or an active job) to provide additional FNT/FST space.
.WAIT FOR CATALOG INTERLOCK.	PFDUMP1 (operator message)	Informative message indicating that permanent file requests are currently active. PFDUMP will automatically continue when interlock on device is successful.	None.
..WAIT FOR TOTAL INTERLOCK..	PFLOAD1 (operator message)	Permanent file requests are currently active; PFLOAD will automatically continue when interlock on device is successful.	None.
WAIT LOG OFF(S) COMPLETE.	TELEX2 (dayfile message)	Informative message indicating that TELEX is entering active users into the recovery file or logging them out.	None.
WAITING FOR COMMON FILE xxxxxxx	LFM (operator message)	Job is waiting for common file xxxxxxx to become available.	Inform site analyst; recommended action is to drop the job or generate the common file requested.

Message	Routine	Description	Action
WAITING FOR STORAGE.	IIO, 1AJ, 1LS, 1MA (operator message)	Informative message indicating that a job is waiting for additional memory to be made available.	None, unless system becomes inoperative. In this event, inform the site analyst.
WPE UNRECOVERED - ABORT.	PFDUMP1 (dayfile message)	Operator has aborted PFDUMP operation by entering K.END in response to UNRECOVERED PARITY ERROR message. This is a fatal system error.	Retry PFDUMP operation using a different tape.
XSP - ARG. ERROR.	XSP (dayfile message)	The call block for an XSP request contained a CM address that was out of range. This condition should never occur.	Inform site analyst.
XSP - WAIT DISK FULL.	XSP (operator message)	XSP is waiting for disk space to become available for a remote job initialization.	Storage space on system device should be made available.
1LS ABT (INT) AT P=x.	1LS (operator message)	Informative message indicating that Export/Import has aborted during initialization. x Internal address at which 1LS detected an abort condition	Inform site analyst.
1LS MODE1 FROM PP AT P=x.	1LS (dayfile message)	PP detected a mode 1 error in the Export executive. This message is followed by the DUMP OR DROP message. x P register address	Refer to description of DUMP OR DROP message.
667x MALFUNCTION.	1TD (dayfile message)	Either a function was not accepted or no multiplexer is on the channel.	Inform customer engineer.
nn BUFFERS ACTIVE	IIO (operator message)	Informative message indicating the number of buffers currently in use by BATCHIO. This message appears at the BATCHIO control point on the DSD job status (B) display.	None.
nn FLAWS NOT PROCESSED, (list)	IMS (dayfile message)	Informative message indicating the number of flaw entries not processed because the tracks specified (list) were in use.	Reenter list of tracks to be flawed at a later time.
nn INPUT FILE(S) DUMPED.	DMQ (dayfile message)	Informative message indicating number of INPUT files dumped.	None.

Message	Routine	Description	Action
nn INPUT FILE(S) RELEASED.	LDQ (dayfile message)	Informative message indicating number of INPUT files loaded into the input queue.	None.
n.nnn K CPU SCANS.	1LS (dayfile message)	Informative message indicating number of CPU scans 1LS has completed since initialization.	None.
n.nnn K INPUT CYCLES.	1LS (dayfile message)	Informative message indicating number of input cycles Export has completed.	None.
n.nnn K OUTPUT CYCLES.	1LS (dayfile message)	Informative message indicating number of output cycles Export has completed.	None.
n.nnn MS. DRIVER MAX. CYCLE.	1LS (dayfile message)	Informative message indicating length of the longest driver service cycle, in milliseconds.	None.
nn PRINT FILE(S) DUMPED.	DMQ (dayfile message)	Informative message indicating number of PRINT files dumped.	None.
nn PRINT FILE(S) RELEASED.	LDQ (dayfile message)	Informative message indicating number of PRINT files loaded into the output queue.	None.
nn PUNCH FILE(S) DUMPED.	DMQ (dayfile message)	Informative message indicating number of PUNCH files dumped.	None.
nn PUNCH FILE(S) RELEASED.	LDQ (dayfile message)	Informative message indicating number of PUNCH files loaded into the punch queue.	None.
nn TRACKS FLAWED.	IMS (dayfile message)	Informative message indicating the number of tracks that were successfully flawed.	None.

END OF OPERATION SHUTDOWN

C

Since the method used to terminate system operations is generally dependent upon the requirements of a specific installation, the actual procedure for shutdown may differ from one installation to another. The following procedure is included as an example and suggests guidelines that can be used to ensure the orderly termination of processing. This procedure should not be confused with the shutdown procedures performed in preparation for a recovery deadstart (refer to Preparing for Recovery Deadstart in section 2).

1. Select the DSD job status (B) display to monitor control activity.
2. If the TELEX subsystem is active at control point 1, provide advanced notice of shutdown time to active time-sharing users by entering the DSD command WARN. For example:

WARN, SYSTEM SHUTDOWN IN FIVE MINUTES, PLEASE LOG-OFF. (CR)

This message is transmitted to all time-sharing terminals upon completion of the current operation.

3. Prevent new time-sharing users from logging into the system by entering the following DSD command.

SERVICE, TX, NJ0. (CR)

The NJ parameter specifies the number of active lines allowed for TELEX (TX) jobs and is set to zero (NJ0).

4. Drop the TRANEX subsystem if active at control point 2. This is done by typing

2.STOP. (CR)

Operator information concerning the Transaction Subsystem (TRANEX) is not included as part of this manual (refer to the TRANEX Operator's Guide Addendum).

5. If the TELEX subsystem is active at control point 1, examine the TELEX status (T) display to determine if there are still active users. When there are no longer active users indicated on the T display, drop TELEX by typing

1.STOP. (CR)

6. Drop EXPORTL (Export/Import subsystem) if it is currently assigned to a control point. This is done by typing

n.STOP. (CR)

n Control point number to which EXPORTL is assigned

If transmission to a remote batch terminal is terminated by dropping EXPORTL, the file being transmitted is rewound and placed back in the output queue. All other files currently scheduled for transmission to remote batch terminals are returned to the output queue.

7. Examine the equipment status (E) display to determine the EST ordinal of the local card readers (CR), card punches (CP), and the line printers (LP and/or LQ). Disable automatic system assignment of the devices mentioned (logically turn devices off) by entering the following DSD command.

OFFxx. (CR)

xx EST ordinal of the device being disabled

If the specified device is active when this command is entered, the current operation is allowed to complete before the device is disabled. Doing this prevents any new output type files from being scheduled to the BATCHIO control point.

8. Prevent any new jobs in the input queue from being scheduled to a control point by dumping the input queue. This is accomplished through use of the DMQ system utility (refer to description of DMQ in section 6). Doing this allows jobs currently scheduled to control points to run to completion. In addition, jobs in the rollout queue will be scheduled back to a control point and allowed to complete.
9. Monitor control point activity on the B display. Wait for all jobs to run to completion and then dump the output queues (print and punch queues). This is also accomplished through use of the DMQ system utility (refer to description in section 6).
10. If permanent files are to be dumped, enable a line printer to receive output reports. This is done by entering the following DSD command.

ONxx. (CR)

xx EST ordinal of the line printer to be enabled (logically turned on)

Refer to the description of the PFDUMP permanent file utility in section 5 for procedures to dump permanent files.

11. If the system is not to be used after shutdown, proceed to step 13. However, if the system is to be used for reasons other than normal NOS processing, perform the following steps.
 - a. Examine the MST (E, M) display to determine if status code C (checkpoint requested) is set for any mass storage device. Wait until the checkpoint operation has completed before proceeding (C status cleared).
 - b. Dismount the deadstart tape (if currently mounted), and activate the deadstart switch. The display screens should become blank indicating that the system hardware is idle. The system is now ready for other use.

- c. Prevent subsequent users of the system from accessing mass storage permanent file devices. This is accomplished by dismounting disk packs (841 and 844 only) or making the devices unavailable (not ready) for system access.

12. If the system is not to be used after NOS operations have ended, enter the following DSD commands.

DISABLE, BATCHIO.	Ⓞ
DISABLE, EI200.	Ⓞ
DISABLE, MAGNET.	Ⓞ
DISABLE, TRANEX.	Ⓞ
DISABLE, TELEX.	Ⓞ
MAINTENANCE.	Ⓞ

Doing this disabled all subsystems and allows maintenance tests to run while the system is not being used. It is recommended that the display screen intensity be turned down before leaving the system.

PERIPHERAL EQUIPMENT OPERATION

D

405 CARD READER OPERATION

Once the MAIN POWER switch on the card reader is lighted, the reader can be loaded and started as follows:

1. Set guide edge of input feed hopper and output stacker for length of card. Narrow half of each tray may be removed, turned end-for-end, and reassembled as necessary.
2. Load cards into hopper, placing column 1 at right as cards face entrance of read station.
3. Check input wall of secondary and main output stackers. If standard cards are used, hinged card-stopping blocks should be positioned to form a flush surface at each input wall. If short cards are used, the hinged block assemblies must be pivoted to protrude from the wall surfaces of each stacker.
4. At feed hopper, set card-stopping pin to protrude from the face plate if short cards are used; turn pin in clockwise direction to form flush wall if long cards are used.
5. If short cards are to be read, press the 51 COLUMN switch until it lights.
6. To check operation:

If MAN is not lighted on the AUTO/MAN switch, press the switch to place the equipment in the manual mode.

If STOP is not lighted on the RUN/STOP switch, press the switch so that STOP lights.

Press the MOTOR POWER switch. Light should turn on and the input hopper begin vibrating.

Press READY switch until it lights.

Press SINGLE PICK switch to cause the first card to be read and transferred to the output stacker. No light exists. If the card does not move properly, check the read station for an obstruction.

Press MOTOR POWER to stop the vibrators and replace card in the input hopper.

7. To allow cards to be read:

Press RUN/STOP so that RUN lights, if necessary.

Press AUTO/MAN so that AUTO lights.

Press MOTOR POWER so that it lights.

Press RELOAD MEMORY. It does not light.

Press READY until it lights.

The switches and indicators on the reader (Figure D-1) are explained in the following paragraph. They differ slightly depending upon the type of controller (3649 or 3447). The controllers are an integral part of the card reader equipment.

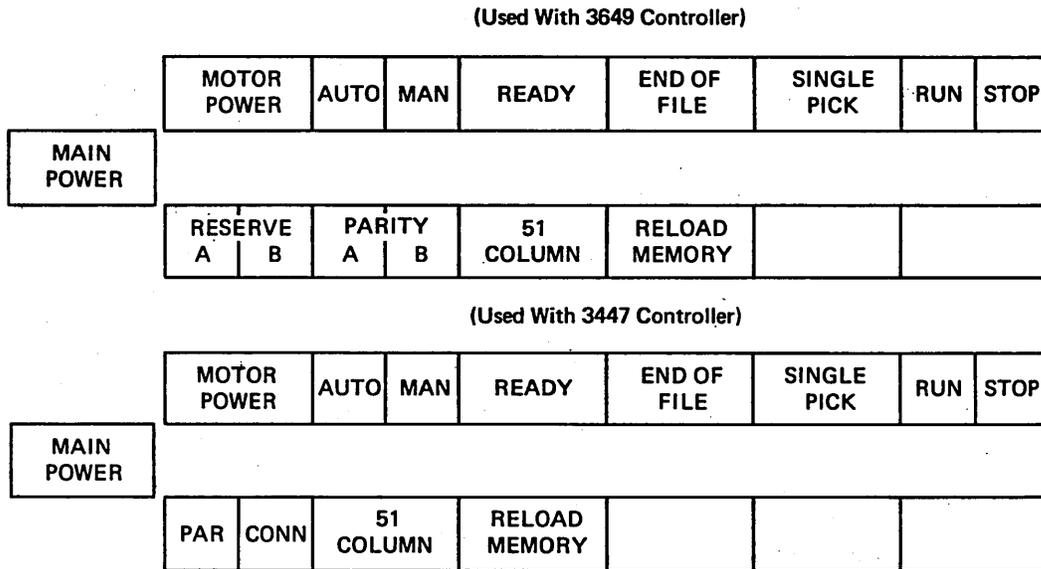


Figure D-1. Card Reader Switches

- MAIN POWER** Controls all primary power and turns on the photocell light source. It is lighted when power is on. It must be on before subsequent operations are effective.
- MOTOR POWER** Controls power to the drive motors, the vacuum-pressure system, and the hopper-stacker vibrators. It must be on before the READY status is effective. It is lighted when on.
- AUTO/MAN** Selects manual or program controlled modes of operation. The switch must be in the AUTO position when the reader is to be controlled by the system. Changing switch position to MAN disables system control, allowing the operator to manually cycle cards.
- READY** The switch lights to indicate the ready condition. When the switch is pressed, the first card is read into buffer memory. Thereafter, the reader is under system control. If the input hopper is empty, error conditions exist on the device, the output stacker is not closed or it is full, a NOT READY condition exists.
- END OF FILE** Causes the reader to generate an end-of-file status bit after the last card in the input tray is read. It lights when set. If the last card in the input tray is not the last card in the file being read into the system, this switch should be off.
- SINGLE PICK** Cycles a single card through the reader when the AUTO/MAN switch is in MAN position. It does not light.

RUN/STOP	The card feed may be controlled manually when the AUTO/MAN switch is in MAN position. The set side is lighted.
RESERVE A/B (3649 Controller only)	One side lights as one of the two converters attached to the controller reserves reader access.
PARITY A/B (3649 Controller only)	This light appears only when a parity error occurs during the transmission of a connect or function code. An error message will appear on the console screen.
PAR/CONN (3447 Controller only)	Similar to the RESERVE and PARITY switches of the 3649 Controller in that one side lights for a parity error and the other when the reader is connected to the controller channel.
51 COLUMN	Allows short (51-column) cards to be read. It is lighted when set.
RELOAD MEMORY	Feeds data from a new card into card reader memory buffer when pressed, providing AUTO/MAN is in AUTO. It does not light. It should be pressed prior to each READY. Inside the right front door are several lights that indicate malfunction. If FEED/FAIL is lighted, a card is not acceptable or a card jam exists. Lifting the read station panel will expose the card guides.

The PRE-READ and COMPARE lights indicate that the pre-read and read stations do not interpret a card identically. An attempt should be made to reread the card.

415 CARD PUNCH OPERATION

The controller for the card punch, 3644 or 3446, is in a separate cabinet. It has the equipment number switch that establishes the equipment number for the punch in the EST display. With the exception of the lights mentioned in the following paragraph, controller switches are the responsibility of the customer engineer.

Once the MAIN POWER and MOTOR POWER switches on the card punch are lighted, operation is initiated as follows:

1. Place cards face down in input hopper with row 9 toward rear.
2. Check that chip box and output stacker are not full.
3. Advance two cards into the punch and read stations by pressing the SINGLE PICK switch twice.
4. Check the controller equipment. If either the NOT READY or FAIL TO FEED light is on, cards have not advanced into the punch and read stations.

The card punch is then ready for operation.

Switches on the card punch (Figure D-2) have the following functions.

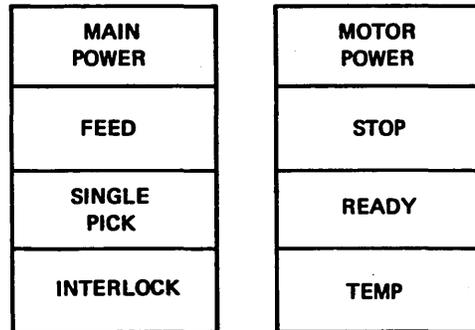


Figure D-2. 415 Card Punch Switches

- MAIN POWER** This switch applies power to the cooling fans and the power supplies. It is lighted when power is on.
- MOTOR POWER** This switch applies power to the punch motor. It is lighted when power is on.
- FEED** This indicator lights when a card jam exists. A message CPuu NOT READY appears at the console. A customer engineer should be called to remove the jammed card.
- STOP** With this switch, the operator can cause the punch to become not ready. It lights when pressed to stop system control.
- SINGLE PICK** This switch advances cards one station in the input hopper-punch-read-output cycle. It lights until the advance is complete.
- READY** This switch clears punch logic and puts it in automatic mode for system control. It lights when the punch is in a ready condition. If it does not light when pressed, conditions such as feed failure and full output stack should be examined and corrected.
- TEMPERATURE** If this light is on, the temperature of the punch exceeds operation requirements. A customer engineer should be consulted.
- INTERLOCK** This switch lights if the head panel, hood panel, or right door is open. All should be closed during operation.
- STACKER FULL** This switch lights when the output stacker is filled. It resets automatically when cards are removed from the stacker.

A toggle switch is located at the top of the output stacker which automatically turns off the card punch when the stacker is full. It must be reset when cards are removed from the stacker.

512 LINE PRINTER OPERATION

The 512 Printer combines the printer and its controller in one cabinet. Paper supplies in front of the machine pass upward between the printer gate on the front door and the print head in the cabinet and emerge at the back. Operator manual controls on the back duplicate four switches on the front to facilitate removing paper.

Front panel controls in Figure D-3 include indicator lights for the controller as well as the manual operation switches.

POWER OFF	STOP	PAGE EJECT	6 LINE	8 LINE	CONN	TRANS PAR	MEM PAR	SYNC ERROR
POWER ON	START	SINGLE SPACE	ERROR OVERRIDE	SINGLE CYCLE	PPGM ERROR	PRINT ERROR		
THERMAL	DC POWER	GATE	PAPER FAULT	PAPER MOTION	HAMMER FUSE	MEMORY BUSY	IMAGE PARITY	

Figure D-3. 512 Line Printer Switches

Indicators on the bottom row light to pinpoint conditions that make the printer inoperative. Some conditions can be corrected by the operator; others require customer engineer action.

GATE	Printer arm assembly should be closed fully.
PAPER FAULT	Paper tear, jam, or supply should be corrected.
PAPER MOTION	Power on should be pressed.

When the POWER ON switch is lighted indicating power to the printer itself, the printer is manually controlled by:

- | | |
|--------------|--|
| START | Readies printer |
| STOP | Makes printer not ready |
| PAGE EJECT | Advances paper to top of form under manual control |
| SINGLE SPACE | Prints single blank line under manual control |
| POWER OFF | Turns off all power to equipment |

Other indicators on the panel denote status or identify error conditions.

PAPER LOADING

To load paper into the 512 Printer (Figure D-4) when it has run out:

1. Open front printer gate.
2. Remove old paper supply with PAGE EJECT switch.
3. Open pressure plate on upper and lower left and right tractors.

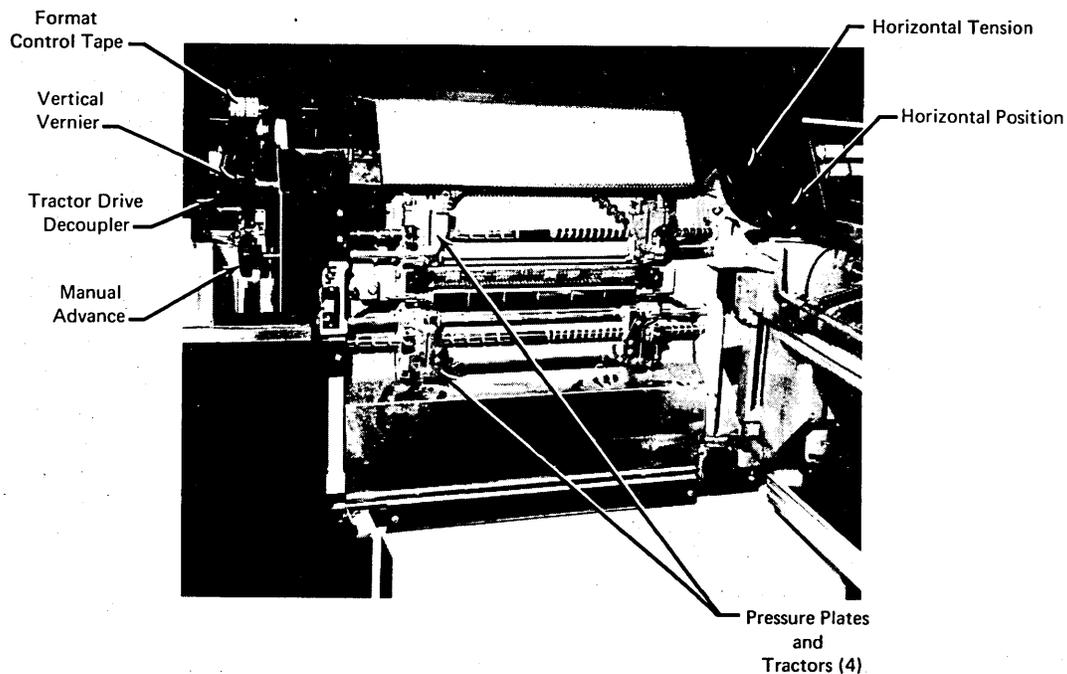


Figure D-4. 512 Line Printer Controls

4. Raise paper vertically from supply box and place into upper and then lower paper tractors.
5. Close all four pressure plates.
6. Close front panel securely.
7. Press START to resume system control. If printing does not begin at top of form, reposition paper in the tractors.

Loading forms of a different width or thickness involves the following:

1. Move the tractors to the approximate position by squeezing the detent release and sliding the tractors to the required position. Detents must reengage in their new positions. The left and right tractors must be aligned vertically.
2. Place the forms into the upper left paper tractor. Close the pressure plate over the forms to secure them.
3. In the same manner, place the forms into the lower left paper tractor.
4. Move both right paper tractors into the approximate position by rotating the horizontal tension control.
5. Place the forms into the right paper tractor. Secure the forms in place with the pressure plate.
6. In the same manner, place the forms in the lower right paper tractor.
7. Adjust the horizontal tension control so the forms do not buckle (too loose) and the tractor pins do not stretch the perforated holes (too tight).
8. Close the forms alignment scale against the paper. When the train is opened at least 45 degrees from the paper line, the line finder rises so that the plastic strip indicates exactly the bottom of the next line to be printed. The column marker indicates the location of the print columns on the forms.
9. Move the horizontal position control to align the forms with the proper print columns.
10. Uncouple the format tape with the tractor drive uncoupler knob above the paper drive motor. Move this knob toward the back of the machine to engage the eight line-per-inch stops or toward the front of the machine to engage the six line-per-inch stops.
11. Use the manual advance knob on the left side of the paper forms to adjust the forms to the approximate vertical position. This knob can move forms for an unlimited length up and down. Detent clicks of six or eight lines per inch can be felt when the paper forms are moved. Stop on the detent click nearest the desired position.
12. Turn the vertical vernier knob for fine adjustment of the paper forms. Forms can be accurately positioned while the printer is idle or printing. The full range of this control is one line.
13. Push PAGE EJECT before recoupling the format tape.
14. Recouple (step 10) the format tape and close the train gate to synchronize the top of the paper form with the top of form hole (channel 1) in the format tape. At this time, the printer is mechanically ready to print.

Printing adjustments are made as follows:

1. Push the paper exit drive release control to allow the paper forms to slide between the rollers. Use this control to free the paper forms from the paper exit drive system to adjust paper forms horizontally; reverse paper forms toward the paper supply source.
2. Adjust the forms stacker bar so that the paper forms fan fold properly. The stack bar can be released with the detent on the left side of the bar.
3. The forms thickness control is on the left side near the train gate latch. This control provides even top-to-bottom character density when properly set.
4. The print density control is near the format tape assembly. Adjusting to minimal acceptable print density prolongs ribbon life and prevents forms from embossing. The horizontal or vertical vernier controls can be used to position the forms while the machine is printing.

RIBBON CHANGE

1. Unlatch the train gate cover.
2. Unlatch the train gate or printer gate from the print head.
3. Move the line finder against the print head.
4. Grasp the ribbon rolls with the left hand on the upper roll and the right hand on the lower roll.
5. Push the rolls toward the hinged side of the gate and lift them out together.
6. Lift the ribbon out and away from the type array arm.
7. After the new ribbon is unwrapped, grasp one roll in the left hand and the other roll in the right hand.
8. Bring the ribbon against the print gate. The ribbon does not go around the line finder. The line finder should be closed against the print heads so the ribbon does not pass between the line finder and the print head.
9. Insert the ribbon rolls by pushing them against the right ribbon support spools.
10. Ease the ribbon rolls into place against the left ribbon support spools. Make sure the keys on the left-hand ribbon spools fit into the slots on the ribbon rolls. Rotate upper roll to remove slack.

FORMAT TAPE LOADING

1. Loosen the tape spool and slide it toward the drive hub.
2. Place the format tape on the drive hub and in the space between the reader and the lamp housing. The coincidence lines on the format tape must be aligned with the scribe lines on the drive hub and the arrows on the tape must point toward the back of the printer.
3. Place the format tape over the tape spool, slide the tape spool down the slot until there is 1/8 inch slack in the format tape loop.
4. Tighten the tape spool.

The correct level punches for 501 compatible format tape and NOS/KRONOS compatible format tape are given in appendix A.

580 LINE PRINTER OPERATION

The 580 line printer includes both the printer and controller in one cabinet. Operator manual controls on the back duplicate three switches on the front to facilitate removing paper.

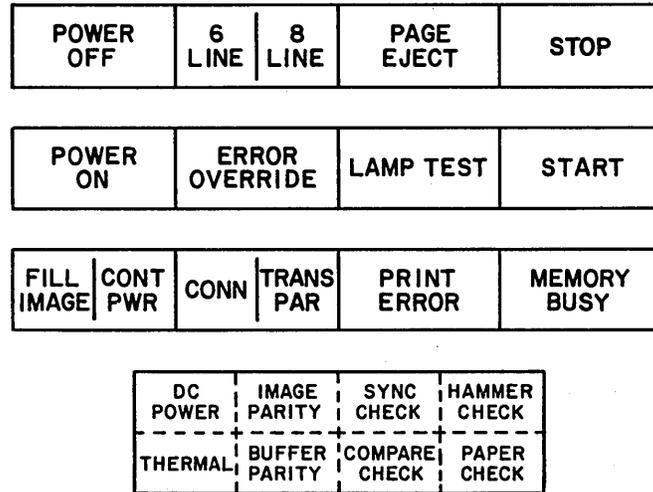


Figure D-5. 580 Line Printer Switches

When the POWER ON switch is lighted indicating power to the printer, operation can be controlled by the following switches.

POWER OFF	Turns off power supply
6 LINE 8 LINE	Pressing alternates between 6 and 8 line per inch spacing. One-half of the indicator is illuminated, depending on which spacing mode has been selected.
PAGE EJECT	Under manual control, advances paper to top of form as determined by format loop control
STOP	Stops printer control
LAMP TEST	Pressing causes all lamp indicators on the control panels to light
START	Readies printer (lighted when selected)

The remaining indicators light when the condition specified has occurred.

PAPER LOADING

To load paper into the 580 printer:

1. Press POWER HOOD switch on left side of cabinet to raise hood.
2. Remove old paper supply with PAGE EJECT switch.
3. Open front printer gate.
4. Open pressure plate on upper and lower left and right tractors.
5. Raise paper vertically from supply box and place into upper and lower paper tractors. Close all four pressure plates.
6. Close front panel securely.
7. Press PAGE EJECT three times and manually feed the forms over the paper bail and into the stacker exit rollers.
8. In back of printer, press PLATFORM DOWN switch to lower forms platform.
9. Press PAGE EJECT to observe that forms fold properly and are correctly aligned.
10. Press PLATFORM UP switch and observe that forms fold and fit properly as platform rises.

To load forms of a different width or thickness:

1. Move tractors to approximate position by loosening the tractor locking knob and sliding tractors until aligned. Tighten locking knob.
2. Place forms in upper left paper tractor and close tractor door.
3. Place forms in lower left paper tractor and close tractor door.
4. Place forms in upper right paper tractor and close tractor door.
5. Place forms in lower right paper tractor and close tractor door.
6. Slide the two right hand tractors to adjust the horizontal paper tension. Forms should not buckle (too loose) and the tractor pins should not deform the holes (too tight). Tighten the tractor locking knobs on the right hand tractors.
7. Close the forms alignment scale against the paper. The scale indicates print column location and the top of the ribbon shield indicates the bottom of the next line of print.
8. Adjust the horizontal position control to align the forms with the proper print columns.
9. Place the forms lock control in the manual position and adjust the manual forms advance control to align forms vertically to the top of forms position.
10. Place the forms lock control in the auto position, relatch the forms alignment scale to the print gate, and the print gate to the print head.
11. Press PAGE EJECT three times and manually feed the forms over the paper bail and into the stacker exit rollers.
12. In back of printer, press PLATFORM DOWN switch to lower forms platform.
13. Press PAGE EJECT to observe that forms fold as originally folded, that multipart forms do not separate, and that the forms are properly aligned to the forms scales.

14. Press the PLATFORM UP switch and observe that the forms fold properly as the platform rises and that the forms fit properly between the paper guides.

RIBBON CHANGE

1. Press the POWER HOOD switch on left side of cabinet to raise hood.
2. Press POWER OFF switch.
3. Unlatch print gate and swing away from the print head.
4. Unlatch ribbon cover and swing away from the print gate.
5. Unlatch line finder and swing away from the print gate.
6. Grasp the ribbon rolls with the left hand on the upper roll and the right hand on the lower roll.
7. Push the rolls toward the hinged end of the print gate; lift the upper roll up and off the spool and the lower roll down and off the spool.
8. Pass the left hand over, behind, and then under the print gate and remove the ribbon.
9. After the new ribbon is unwrapped, grasp one roll in the left hand and the other roll in the right hand.
10. Approaching print gate from the latch end, hold right hand in front of lower ribbon spools. Pass ribbon roll in left hand under, behind, and over the print gate bringing it to the upper ribbon spools.
11. Press ribbon roll in left hand against the upper ribbon spool on the hinged end of the print gate and press the roll in right hand against lower ribbon spool.
12. Ease the ribbon rolls into place against the ribbon spools on the latch end of the print gate ensuring that the drive keys on the ribbon spools fit into the slots in the ribbon rolls.
13. Rotate upper ribbon roll to take up slack.
14. Latch linefinder and ribbon cover to print gate and close print gate.
15. Press POWER ON switch.

FORMAT TAPE LOADING

1. Press the POWER HOOD switch to raise hood.
2. Loosen the tape spool and slide it toward the drive hub.
3. Place the format tape on the drive hub and in the space between the reader and the lamp housing. The coincidence lines on the format tape must be aligned with the scribe lines on the drive hub and the arrows on the tape must point toward the back of the printer.
4. Place the format tape over the tape spool, slide the tape spool down the slot until there is 1/8 inch slack in the format tape loop.
5. Tighten the tape spool.

The correct level punches for 501 compatible format tape and NOS/KRONOS compatible format tape are given in appendix A.

TAPE UNIT OPERATION

NOS supports unit models 657 and 667 for 1/2-inch 7-track magnetic tape and models 659 and 669 for 1/2-inch 9-track tape.

All models have a unit select switch at the top of the cabinet. This switch has positions 0 to 7 and is used to identify the unit. Each unit that is on should have a unique number but once this switch is set, it can be ignored during operation. It lights red when the unit is reserved on a data channel.

The system and the operator identify a unit by its EST ordinal as shown in the E display. Installations usually configure the system so the last digit of an ordinal for a tape drive is the same as the unit select switch setting, making it easier to equate the two.

657 AND 659 TAPE UNITS

The following switches and indicators on 657 and 659 tape units are explained below.

POWER	WRITE ENABLE	READY	CLEAR	LOAD FORWARD	REWIND	REVERSE	200	556	800
-------	-----------------	-------	-------	-----------------	--------	---------	-----	-----	-----

Figure D-6. 657 and 659 Tape Unit Switches and Indicators

POWER	When power is applied to the unit, this switch is lighted.
WRITE ENABLE	Indicates presence of a write ring on a reel.
READY	This switch places the unit under processor rather than manual control. It is lighted when ready status exists.
CLEAR	When CLEAR is pressed, it initiates a master clear of processor control and places the unit under manual control. It is lighted when selected.
REWIND	When REWIND is pressed, the tape rewinds from the takeup reel to the supply reel, stopping at the load point. It lights during tape motion.
REVERSE	When REVERSE is pressed, the tape begins to move backward onto the supply reel, stopping when the CLEAR switch is pressed or the load point marker is sensed. It lights during tape motion.
200	Pressing this switch selects a recording density of 200 bytes per inch; it is lighted when selected.
556	Pressing this switch selects a recording density of 556 bytes per inch; it is lighted when selected.
800	Pressing this switch selects a recording density of 800 bytes per inch; it is lighted when selected.

Procedures for loading a tape after power is on:

1. Open door.
2. Check that supply reel has been file protected as necessary, with the write enable ring in or out.
3. Mount reel on supply hub to the right, facing the unit. Push the reel firmly in place by applying pressure near the hub rather than the edge of the reel; lock it by closing the latch.
4. Pull tape from supply reel to takeup reel. Thread tape on the outside of the tape guide roller, under the head assembly, around the outside of a second guide, and over the top of the takeup reel. Release tape and spin the takeup reel two or three times. Tape should not stick out from reel.
5. If the system is not processing jobs, set UNIT SELECT switch (0 to 7) if necessary. The UNIT SELECT switch should not be changed while there is a possibility that the scheduler routine is accessing the unit.
6. Press CLEAR switch.
7. Press LOAD FORWARD. Tape drops in columns, moves forward, and stops on load point marker. LOAD indicator lights. If tape continues moving forward for more than 3 or 4 seconds, either no load point marker was placed on the tape, or the operator manually wound the marker into the takeup reel during step 4.
8. Press READY switch.
9. Close door.

To unload the tape when it has not been unloaded under program control:

1. From console keyboard, enter DSD command UNLOAD,xx. (xx is EST ordinal of tape unit). All tape is drawn automatically from the takeup reel and wound on the supply reel.
2. Open door.
3. Lift latch of hub; remove reel. To keep the pressurized locking gasket in place, the latch should not be closed when no reel is mounted.
4. Check if write enable ring needs to be removed and if reel is labeled adequately prior to storage.

667, 669 TAPE UNITS

On-line operation of the 667 and 669 tape units is controlled and synchronized with system demands by an associated tape control unit. Power-up and autothread/auto-load operations are facilitated by front panel controls and indicators located at the top front of the tape unit. The functions of these switches and indicators (Figure D-7) are described below. Alternate action switch functions are described in terms of (1) first and (2) second action.

POWER	(1) Activates power circuits, places tape unit in a power-up status, and lights indicator. (2) Deactivates power circuits, places tape unit in a power-down status, and turns off indicator light.
LOAD REWIND	(1) Initiates load operation (reel-to-reel contact, thread and set loops). (2) When unit is off-line, initiates rewind to loadpoint operation.
UNLOAD	Initiates unload operation by rewinding leader length onto right-hand reel.
READY	Places tape unit under system control via tape control unit. Light indicates unit is in ready status awaiting system activity. Light extinguishes when a fault condition is detected.
CLEAR	When tape unit is on-line, negates READY condition and stops tape motion. When unit is off-line, stops tape motion and clears fault condition. Light comes on when loop fault is detected.
SELECT	No switch function. Light comes on when tape unit is selected by tape control unit.
LOAD POINT	No switch function. Illuminates when loadpoint marker or end of tape marker is detected, depending upon tape motion direction.
LOAD FAULT	No switch function. Indicates a fault occurred during load procedure.
WRITE DISABLE	No switch function. Illuminated, it indicates the absence of a write enable ring in the right-hand tape reel. Disables the write circuitry and conditions the tape unit to accept only read functions.
HI DEN/LO DEN	No switch function. HI DEN illuminates in phase mode for 9-track tapes or in 800 bpi NRZI mode for 7-track tapes. LO DEN illuminates in 800 bpi NRZI mode for either 9- or 7-track tapes or for 556 bpi NRZI mode for 7-track tapes.
UNIT ADDRESS READOUT	Shows tape unit system address in octal numbers, 00 to 17.

UNIT NO/
HOLD REL

Two-position rocker switch used to assign tape unit system address. Pressing UNIT NO portion causes internal address generator to cycle through all unit addresses and causes light to illuminate, indicating that a hold status is being sent to tape controller unit. Pressing HOLD REL portions assigns address showing on unit address readout to tape unit and removes the hold status to tape controller unit.

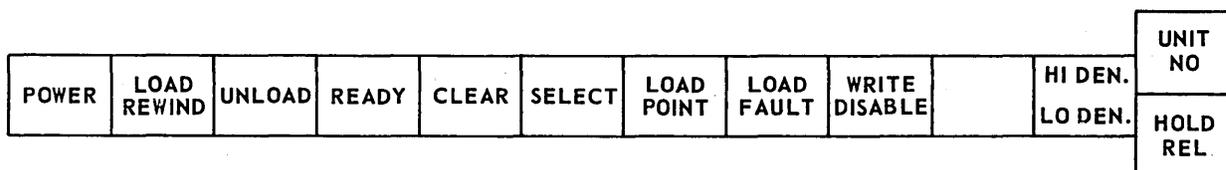


Figure D-7. 667/669 Tape Unit Operator Control Panel

The 667/669 tape unit can handle cartridge-contained tape reels or standard 10 1/2-inch supply reels. Smaller non-cartridge reels can be used, but they must be threaded manually. The take-up reel on left-hand side is a vacuum hub assembly permanently attached to the tape unit.

When a load sequence is initiated, the cartridge-contained tape reel programs the tape unit to thread tape and load loops into the vacuum columns automatically. Internal delays control the timing of the load/thread operation. If a fault is detected during a load attempt or if a successful load is not achieved, one automatic retry is executed. At the expiration of the automatic load attempt, the tape unit automatically unloads, closes the tape cartridge mechanism, and lowers the power window. When standard reels are used, the automatic retry is inhibited and operator action is required.

The power window of the tape unit is activated by control logic circuits and is raised or lowered in response to LOAD and UNLOAD commands initiated by the operator. Initially, when the POWER switch is pressed, the window lowers, allowing access to the tape deck. An interlock protection switch prevents power window operation when the front access door is open.

Prior to operating the tape unit, the operator should review thoroughly the description of control switches and indicators.

REEL INSTALLATION

Standard (Non-Cartridge) Reel

1. Power-up unit by pressing POWER switch. POWER light illuminates and the window lowers.

2. Install write-enable ring within inner surface cutout of reel if write operation is to be performed. The write-enable ring is to be installed only if a write operation is to be performed. Valuable data stored on the tape must be protected by removing the write ring when read only operation is to be performed.
3. Place reel into right-hand hub. Ensure that reel is fully seated against hub face.
4. Manually rotate reel hub clockwise until several inches of tape leader extend along inner surface of tape chute.

Cartridge-Loaded Reel

1. Perform steps 1 and 2 as for standard reel.
2. Orient cartridge reel on hub so that locating notches in cartridge retainer and chute assembly align with keys on outer rim of cartridge. Ensure that actuator rod fits into recess of cartridge latch.
3. Press cartridge into place on hub; seat firmly against hub face.

LOAD/THREAD

Operator action, such as pressing LOAD/REWIND switch, initiates a load/thread operation. The cartridge actuator rotates clockwise until the cartridge is brought to the full open position. Observe the following points for either cartridge or standard reels.

1. Tape proceeds along tape feed path and enters the left-hand vacuum reel enclosure.
2. Left reel rotates clockwise until load point marker is detected. Reel motion then ceases.
3. Tape is drawn immediately into loop columns and drops below AR and AL sensors.
4. Motion stops when load point marker is correctly positioned.

READY STATUS

At completion of load/thread sequence, the 667/669 tape unit is placed in ready status if the READY switch on the front panel of the tape unit has been pressed. The READY indicator illuminates, followed by the SELECT light, indicating receipt of an on-line callup by the system.

REWIND

A tape rewind to load point, when operation is in off-line mode, is initiated by pressing the LOAD/REWIND switch. When the tape unit is under system control, it first must be placed in off-line mode by pressing the CLEAR switch. Rewind operation can be initiated through system programming in the on-line mode. Rewind operation terminates when the load point marker is encountered.

With the unit off-line, the operator can select a rewind/unload sequence. Pressing the UNLOAD switch initiates a rewind to load point (if load point has not been detected) and continues to unwind the tape loader from the left-hand reel onto the right-hand reel.

UNLOAD AND REEL REMOVAL

The sequence of the unload operation parallels the REWIND procedure, in that the tape unit must be placed off-line. System programming can affect an unload procedure when the tape unit is on-line.

After unload is initiated, the tape rewinds at high speed until the load point marker is detected. A downshift to normal operating speed occurs at load point detection. The leader length unwinds completely from the left onto the right-hand reel and simultaneously, the cartridge closes and the power window lowers. The automatic hub, if applicable, releases the right-hand tape reel for removal from the tape deck area.

EMERGENCY STOP

Operator action of the CLEAR switch terminates the operation in progress. Switch activation is effective in either off-line or on-line mode. Pressing the CLEAR switch one time, while in rewind mode, causes the unit to downshift to normal tape speed; 200, 150, or 100 inches per second. A second activation terminates the rewind operation and causes the tape movement to stop.

REFLECTIVE MARKERS

The load point and end-of-tape markers are placed near the beginning and end of the tape to enable sensing of the usable portion of the tape by the photocells. Adhesive material on one side of reflective material secures the markers to the tape. Vaporized aluminum deposited on the material creates a highly reflective surface.

The markers, approximately 1.2 inches long and 0.2 inch wide, are placed on the uncoated side of the tape. The uncoated side is the underside of the tape when mounted on the tape deck. The end-of-tape marker is placed on the edge of the tape nearest the tape deck; the load point is placed on the outer edge of the tape. The 667/669 tape unit is capable of loading tapes with load point markers located up to 40 feet from the beginning of the tape.

841 MULTIPLE DISK DRIVE OPERATION

To ready an 871 disk pack on the 841 Multiple Disk Drive after power is on:

1. Pull open the drawer that contains the pack spindle.
2. Place the pack on the spindle and turn the cover handle clockwise to a full stop position. The pack should be tight on the spindle so that its protective cover lifts off easily.
3. Close the drawer and press the START switch on the front of the drive unit. This causes the SPIN switch to light and the unit to perform an initial seek operation which positions the read/write heads.

The unit is ready for operation when the UNIT number switch lights.

To unload:

1. Press the START switch. The light in the switch goes off.
2. Wait until the lights for the UNIT number switch and the SPIN switch go off before attempting to open the drawer, then pull open the drawer.
3. Engage the protective cover over the disk pack and rotate the cover three times in a counterclockwise direction to release the pack from the spindle. Then it can be lifted from the drive unit.

844 DISK STORAGE UNIT OPERATION

To ready an 881 disk pack on the 844 Disk Storage Unit:

1. Press the main cover latch and lift the main cover. The dust cover opens with the main cover.
2. Using its cover as a handle, place the disk pack slowly over the spindle until it engages the spindle drive unit. Turn the disk pack cover clockwise to a full stop position and lift the cover off the disk pack.
3. Close the main cover making sure that it latches. If the cover is not securely latched, the dust cover interlock remains open and prevents power application.
4. Press the START switch to apply power to the unit. When the disk pack is at operating speed, the READY indicator lights. The disk storage unit is now ready for operation.

To unload:

1. Press the START switch to turn off the indicator light and stop the unit.
2. When the disk pack has stopped spinning, press the main cover latch and lift the main cover. The dust cover opens with the main cover.
3. Place a disk pack cover over the loaded disk pack so that it engages the spindle. Turn counterclockwise until the spindle clicks, and lift the cover and disk pack from the unit. Place one hand under the disk pack to prevent the disk pack from falling free of the cover.

DISPLAY CONSOLE (CDC CYBER 170 Series)

The console panel (Figure D-8) contains the DEAD START toggle switch and controls, affecting the appearance of displayed information.



Figure D-8. Console Panel

The following controls allow the operator to change the characteristics of displayed characters.

- | | |
|-----------|--|
| CENTERING | Varies horizontal and vertical position of display |
| FOCUS | Changes clarity in center areas of display |
| INTENSITY | Varies brightness of display |

Located on the lower right-hand side of the console keyboard is the PRESENTATION CONTROL rocker switch. It is labeled LEFT, RIGHT, and MAINTENANCE to allow the operator to specify a single left screen display (LEFT), a single right screen display (RIGHT), or a split screen display containing a left and a right display (MAINTENANCE).

6612 DUAL SCREEN DISPLAY CONSOLE (CDC CYBER 70 and 6000 Series)

Controls on a panel below the display screens (Figure D-9) allow the operator to change the characteristics of displayed characters.

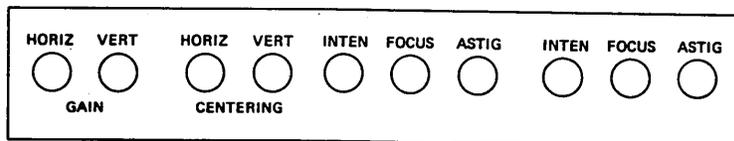


Figure D-9. Display Controls

Controls to the left affect both screens:

- | | |
|-----------|--|
| GAIN | Varies width (HORIZ) or height (VERT) or area of display |
| CENTERING | Varies horizontal and vertical position of display |

The sets of three knobs affect the right and left screens individually.

- | | |
|-------|--|
| INTEN | Varies brightness of display |
| FOCUS | Changes clarity in center areas of display |
| ASTIG | Changes clarity at edges of display |

ACCESS COMMANDS

E

The ACCESS commands allow communication between two interactive terminals. These commands are not accepted as console entries and must be entered from an interactive terminal. That is, a validated user may log in at an interactive terminal and communicate with any other interactive terminal currently logged into the system. The user number specified during the login sequence must have proper validation before entry of these commands is accepted. In addition, use of these commands need not be restricted to operations personnel. Any user with the proper validation may enter the ACCESS commands from any interactive terminal recognized by the system.

NOTE

These commands are not accepted as console entries (under DSD or DIS).

The following command must be entered before the user is allowed to use the ACCESS commands.

<u>Command</u>	<u>Description</u>
ACCESS (CR)	The system replies READY, if the user is validated to use the ACCESS commands. If the user is not validated, the message, ILLEGAL COMMAND, is returned.

After the READY response, the user may enter any of the following commands.

DIAL, nnnn, sss (CR)	Sends a one-line message sss to the terminal specified by multiplexer port number nnnn.
----------------------	---

The possible system responses to this command are:

- READY When the message has been sent
- TTY NOT ACTIVE When the specified terminal is inactive
- OUTPUT BUSY When terminal to which message is directed is currently transmitting; message is not issued

MONITOR, nnnn (CR)	Connects the calling terminal with the terminal specified by multiplexer port number nnnn. All input from and output to terminal nnnn is received by the monitoring terminal.
--------------------	---

A possible system reply to this command is:

- TTY NOT ACTIVE The terminal being requested is inactive.

Command

Description

When a user is monitoring another user, he may communicate directly with the other user by entering text whenever the other user is not receiving output. When a carriage return is entered, the line of text is sent to the user being monitored. This allows easy two-way interaction between users.

Only ASCII code terminals may monitor another time-sharing terminal. Binary input and output cannot be monitored.

Monitoring of another user terminates on any of the following conditions.

- The monitored user logs off or disconnects. (If a user logs off, the monitoring terminal is disconnected at the same time the disconnect code is sent to the terminal being monitored.)
- The monitoring user terminates output.
- The monitoring user enters STOP (CR)

USER, usernum

(CR)

Allows a user to determine the terminal number to which a specified user (usernnum) is currently connected.

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COMMENT SHEET

MANUAL TITLE CDC NOS 1.0 Operator's Guide

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