File Number S360-20
Form C24-5022-4

DOS

IBM

Systems Reference Library

IBM System/360 Disk Operating System Operating Guide

Program Numbers:

System Control and Basic IOCS		360N-CL-453
Supervisor (10K)	2311	360N-SV-473
Supervisor (6K)	2311	360N-SV-474
Supervisor (8K)	2311	360N-SV-475
Supervisor (8K)	2314	360N-SV-486
Supervisor (10K)	2314	360N-SV-487
Supervisor (12K)	2314	360N-SV-488
Direct Access Method (DAM) Macros		360N-IO-454
Consecutive Disk IOCS		360N-IO-455
Consecutive Tape IOCS		360N-IO-456
Indexed Sequential File Management System (ISFMS) Macros		360N-IO-457
Consecutive Paper Tape IOCS		360N-IO-458
Compiler I/O Modules		360N-IO-476
Magnetic Character Reader IOCS		360N-IO-477
Optical Character Reader IOCS		360N-IO-478
Group 1 Utilities (Disk and Unit Record)		360N-UT-461
Group 2 Utilities (Magnetic Tape)		360N-UT-462
Group 3 Utilities (Data Cell)		360N-UT-463
Multiprogramming Support Utility Macros		360N-UT-471
Vocabulary File Utility Program		360N-UT-472
Tape Sort/Merge		360N-SM-400
Disk Sort/Merge		360N-SM-450
Assembler		360N-AS-465
Report Program Generator		360N-RG-460
COBOL		360N-CB-452
COBOL and PL/I DASD Macros		360N-CB-468
FORTRAN IV		360N-FO-451
Autotest		360N-PT-459
PL/I		360N-PL-464
Basic Telecommunications Access Method (BTAM)		360N-CQ-469
Queued Telecommunications Access Method (QTAM)		360N-CQ-470

This reference publication describes the operating procedures to be followed when executing jobs in a multiprogramming environment using the Disk Operating System. Topics discussed in this reference publication include: stacked-job processing capability, multiprogramming, both basic and queued telecommunications capability, and functions the operator must perform to initiate system operation and to communicate with the system. A quick reference listing of all system-to-operator messages is included.

Prerequisite publications are: IBM System/360 Disk and Tape Operating Systems, Concepts and Facilities, Form C24-5030 and IBM System/360 Model 30 Operator's Guide, Form A24-3373 (or a corresponding publication).

PREFACE

This publication provides information necessary for executing all IBM-supplied programs in the IBM System/360 Disk Operating System. It should be used in conjunction with the appropriate publication describing the operation of the installation's System/360.

The most significant change in this edition is the addition of batch job processing capabilities in either or both foreground partitions. Formerly, this capability was restricted to the background partition only. Other significant changes included are:

- Simplified procedure for defining disk files.
  Files are now defined by the new DLBL and EXTENT commands/statements which can be used instead of the VOL, DLAB, and XTENT commands/statements used in earlier systems. Although the VOL, DLAB, and XTENT commands/statements can continue to be used, the user will recognize the advantage to be achieved by using the new commands/statements wherever possible.
- Support for the 2314 Direct Access Storage Facility.
- Support for private libraries on disk (SYSSLB and SYSRLB).
- Availability of system logical units (except SYSLNK) to foreground programs.
- Availability of program checkpoint/restart facilities for foreground programs.

For a list of associated System/360 publications, see the IBM System/360 Bibliography, Form A22-6822.

Fifth Edition, February 1968

This edition, C24-5022-4, is a major revision of, and obsoletes, C24-5022-3 and Technical Newsletter N24-5299.

Changes are indicated by a vertical line to the left of the affected text and to the left of affected parts of figures. A dot (•) next to a figure title or page number indicates that the entire figure or page should be reviewed.

Significant changes or additions to the specifications contained in this publication are continually being made. When using this publication in connection with the operation of IBM equipment, check the latest SRL Newsletter for revisions or contact the local IBM branch office.

Requests for copies of IBM publications should be made to your IBM representative or to the IBM branch office serving your locality.

A form is provided at the back of this publication for readers' comments. If the form has been removed, comments may be addressed to IBM Corporation, Programming Publications, Endicott, New York 13760.

REFERENCE PUBLICATIONS

Programmer diagnostics and information about setting up jobs are contained in the specifications publication describing each of the DOS programs. A listing of these publications follows:

1. IBM System/360 Disk Operating System: System Control and System Service Programs, Form C24-5036;

2. IBM System/360 Disk and Tape Operating Systems: Assembler Language, Form C24-3414;

3. IBM System/360 Disk and Tape Operating Systems: COBOL Programmer's Guide, Form C24-5025;

4. IBM System/360 Disk and Tape Operating Systems: Basic FORTRAN IV Programmer's Guide, Form C24-5038;

5. IBM System/360 Disk and Tape Operating Systems: PL/I Programmer's Guide, Form C24-9005;

6. IBM System/360 Disk and Tape Operating Systems: Report Program Generator, Form C26-3570;

7. IBM System/360 Disk and Tape Operating Systems, Tape Sort/Merge Program Specifications, Form C24-3438;

8. IBM System/360 Disk and Tape Operating Systems: Utility Programs Specifications, Form C24-3465;

9. IBM System/360 Disk Operating System: Autotest Specifications, Form C24-5062;

10. IBM System/360 Disk Operating System: Vocabulary File Utility Program, Form C27-6924;

11. IBM System/360 Disk Operating System User's Guide: Control Statement Technique, Form C20-1685.

Machine publications providing information about the input/output devices on the system are as follows.

For card readers and card punches:

1. IBM 1442 N1 and N2 Card Read Punch, Form A21-9025;

2. IBM 2501 Card Reader, Models B1 and B2, Form A21-9026;

3. IBM 2520 Card Read Punch, Model B1 and Card Punch, Models B2 and B3, Form A21-9027;

4. IBM 2540 Component Description and Operating Procedures, Form A21-9033.

For printers:

1. IBM 1403 Printer, Form A24-3073;

2. IBM 1404 Printer, Form A24-1446;

3. IBM 1443 Printer, Models 1, 2, N1, and IBM 1445 Printer, Models 1, N1, Form A24-3120.

Also see IBM 2821 Control Unit, Form A24-3312.

For the printer-keyboard: IBM 1050 Operator's Guide, Form A24-3125.

For magnetic tape units: IBM 2400 Magnetic Tape Units and 2816 Switching Units--Principles of Operation, Form A22-6866.

For disk storage and data cell drives: IBM System/360 Component Description--2841 Storage Control Unit: 2302 Disk Storage, Models 3 and 4; 2311 Disk Storage Drive; 2321 Data Cell Drive, Model 1; 7320 Drum Storage, Form A26-5988 and IBM System/360 2314 Component Description, Form A26-3599.

For paper tape readers: IBM 2671 Paper Tape Reader, Form A24-3388.

For optical readers: IBM 1285 Optical Reader, Form A24-3265 and IBM 1287 Optical Reader, Form A21-9064.

For magnetic ink character readers: IBM 1219 Reader Sorter; IBM 1419 Magnetic Character Reader, Form A24-1499 and IBM 1259 Magnetic Character Reader Component Description, Form A24-3500.

CONTENTS

BATCHED-JOB PROCESSING

The IBM System/360 Disk Operating System is designed to provide an orderly transition between programs executed in a stacked-job environment. In order that the time interval between the execution of jobs be kept to a minimum, a control program remains in main storage during the execution of all programs in the system. One of the main functions of the control program is to transfer control from one function to the next.

Batch processing capabilities, within the following limitations, are now available to all three programming partitions (BG, F1, and F2) in a multiprogramming system, provided this option is specified at the time the system is generated. Formerly, this capability was restricted to the background partition only.

The two limitations that must be satisfied before batch processing can be undertaken in two or more programming partitions are:

1. Separate input/output files for each partition.
2. At least 10K bytes of storage for each partition.

Batch processing capabilities are discussed in greater detail in the sections Multiprogramming and Job Control. Two new operator commands, required to initiate and terminate batch processing, are discussed in the section Operator Command Formats.

Because the control program resides on disk, it must be read into main storage by an IPI (Initial Program Loading) procedure before the first job can be processed. A job may consist of either the execution of a single program in the system or the execution of more than one program. Each execution is called a job step. Thus, a job consists of a series of one or more job steps.

In preparing to execute a job, the operator must be sure that:

1. Input for the control program is on the correct device. This can be a card reader, magnetic tape unit, or disk.
2. Input for the processing program is on the correct device. This can be a card reader, magnetic tape unit, or disk.
3. Any I/O devices referenced by the processing program have been readied.

After the operator has checked the preceding items, his primary function is to monitor messages that may appear on the 1052 printer-keyboard, and to service, as required, card readers and punches, printers, magnetic tapes, disk units, etc.

MULTIPROGRAMMING

For those systems with main storage equal to or greater than 24K, the Disk Operating System offers multiprogramming support. This support is referred to as Fixed Partitioned Multiprogramming, because the number and size of the partitions is fixed, or defined, during system generation. The size of the partitions may be redefined by the console operator for a specific program after system generation.

Background vs Foreground Programs

There are two types of problem programs in multiprogramming: background and foreground. Foreground programs may operate in either the batched-job mode or in the single-program mode. Background programs and batched-job foreground programs are initiated by Job Control from the batched-job input streams. Single-program foreground programs are initiated by the operator from the printer-keyboard. When one program completes, the operator must explicitly initiate the next program.

A multiprogramming environment is capable of concurrently operating one background program and one or two foreground programs. Priority for CPU processing is controlled by the Supervisor, with foreground programs having priority over background programs. All programs operate with interruptions enabled. When an interruption occurs, the Supervisor gains control, processes the interruption, and gives control to the highest priority program that is in a ready state. Control is taken away from a high priority program when that program encounters a condition that prevents continuation of processing until a specified event has occurred. For

example, this condition would occur when a WRITE operation is issued to a tape unit. Control is taken away from a lower priority program when an event on which a higher priority program was waiting has been completed. In the previous example, control would return to the high priority program when the WRITE I/O operation has been executed. When all programs in the system are simultaneously waiting (i.e., no program can process), the system is placed in the wait state enabled for interruptions. Interruptions are received and processed by the Supervisor. When an interruption satisfies a program's wait condition, that program becomes active and competes with other programs for CPU processing time. During a fetch operation, all programming is halted. Thus, programs requiring frequent fetches can adversely affect system throughput.

In addition to at least 24K positions of main storage, multiprogramming support requires the storage protection feature.

If the batch-job foreground option is selected when the system is generated, many types of programs may be run as foreground programs. (Specifying the option causes the generation of individual communication regions for each partition.) However, the Linkage Editor and the maintenance functions of the Librarian are restricted to the background partition. (Refer to the Disk and Tape Operating Systems Concepts and Facilities publication, listed in the Preface, for the IBM-supplied programs that may be run in the foreground partitions.)

Figure 1 illustrates how storage is organized for various size machines. This figure shows that multiprogramming requires at least 24K of storage. Because the background partition can never be less than 10K (refer to AILOC command), it is possible in such a machine to have, in addition to the background area, one foreground area of 6K or two foreground areas of 4K and 2K respectively. SPI programs can be run in these foreground areas within the limitations imposed by the remaining storage available. For a machine with at least 32K of storage, it is possible to have at most two batch processing areas--one in the background and the other in a foreground area. An SPI program can be run in the remaining foreground area, if it does not require more than 4K of storage. There is another possiblity for a 32K machine that is not illustrated in Figure 1. The background area can be 14K (required for the assembler with disk work file variants). In this case, there is insufficient storage remaining to support a second batch processing area. The remaining 8K of storage could, however, be used for SPI programs in one or two foreground areas. In machines with at least 64K of storage, it is possible to have all three programming areas operating in a batch processing environment.

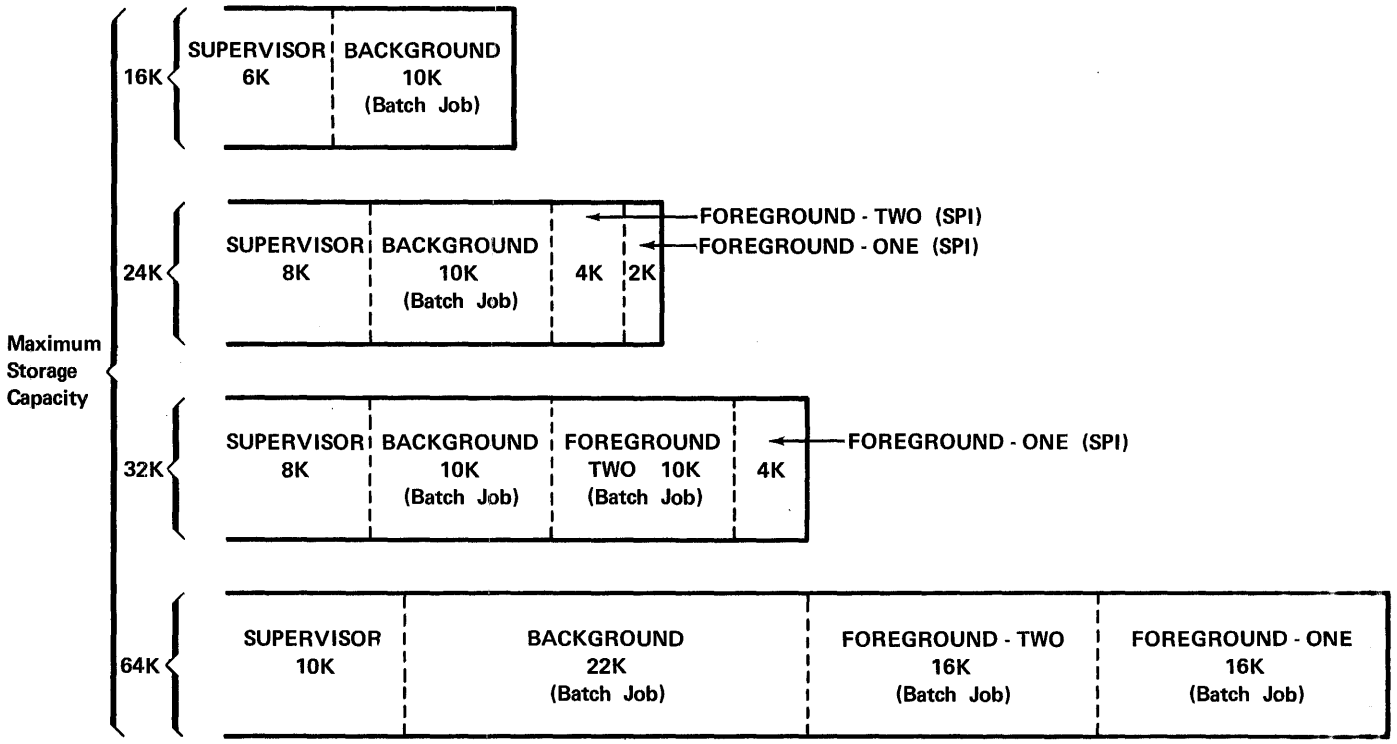
BATCH PROCESSING

The execution of all batch processing programs in either background or foreground areas is under the supervision of a control program.

The main function of the control program is to transfer control from one job step to the next. Job Control is called by:

1. The Initial Program Loader, to process the first batch job after an IPL procedure.
2. The Supervisor, at the normal or abnormal end-of-job for all batch programs.

A job may consist of either the execution of a single program in the system or the execution of more than one program. Each execution is called a job step. Thus, a job consists of a series of one or more job steps.



● Figure 1. Possible Storage Allocation for System/360 with Various Storage Capacities

CONTROL PROGRAM INPUT

The Job Control program requires certain input statements to exercise its control function. These statements, referred to as job-control statements, describe each job step that is to be executed in the program. The format of each of the job-control statements is shown in Appendix A (Figure 11).

Each job normally contains a JOB, one or more EXEC's, and a /& control statement. The other statements are optional, depending upon the job requirements. For example, if disk files are used DLBL and EXTENT statements may also be required. The name of each statement and its function are as follows:

Statement	Function
// ASSGN	Used to assign symbolic names to physical input/output devices.
// DATE	Provides a date for the job being executed.
// CLOSE	Close either a system or programmer logical unit.
// DLBL	Provides DASD (direct access storage device) file label information.
// EXEC	Always the last statement read before a program is executed. It initiates the execution of a job step and can provide the name of the program to be executed.
// JOB	Always the first job statement. It provides the job name.
// LBLTYP	Defines the amount of storage to be reserved at linkage edit time for processing tape and nonsequential disk file labels.
// LISTIO	Prints I/O assignment listings.
// MTC	Initiates magnetic tape control operations.
// OPTION	Establishes program options.
// PAUSE	Causes the system to suspend the processing program input for operator intervention.
// RESET	Resets I/O device assignments to the standard established at system generation time or modified by the operator.

// RSTRT	Provides identification and location of checkpoint records for restarting a job, and starts the execution of the job.
// TLBL // TPLAB	Provides magnetic tape file label information.
// UPSI	Sets user program switch indicators used by the individual program.
// VOL	Provides volume label information.
// EXTENT // XTENT	Indicates the limits of a file on a DASD unit.
/*	Indicates end-of-data file input for a job step.
/&	Always the last statement in every job. Indicates end-of-job.
*	Used for programmer-to-operator comments.

PROCESSING PROGRAM INPUT

A processing program can be a language translator (such as Assembler), a utility program, a sort program, or a user's compiled program that is to be executed by the system.

As with control program input, all input for a processing program is prepared by the programmer. For example, this input can be a set of source statements to be assembled or compiled, or a set of statements describing an input file for a utility program.

I/O DEVICE ASSIGNMENTS

Symbolic names are used to reference all input/output devices in the system. These names are divided into two classes: system logical units and programmer logical units. A listing of the logical units, their functions, and the actual devices to which they can be assigned is shown in Figure 2.

System logical units (SYSIPT, SYSLNK, SYSLOG, SYSLST, SYSPCH, SYSRES, SYSRDR, SYSSLB, and SYSRLB) are used by the control program and by various IBM-supplied processing programs. All of these units (except SYSLNK) can also be used by user programs operating in the background or either foreground problem-program area.

Programmer logical units are defined at system-generation time for each class of problem program (background, foreground-one, and foreground-two) to be run in the system. In a multiprogramming environment, the same SYSnnn can be defined for the background and both foreground areas. For example SYS000 can be assigned to separate physical devices in all three program areas. The combined number of programmer logical units for all program classes defined for the system may not exceed SYSmax -- the highest numbered programmer logical unit available for a partition. SYSmax is determined by the installation at system generation time. SYSmax is not a symbolic name.

For the convenience of the user, two additional system logical unit names are defined for batch processing programs. These names are used only in certain Job Control statements (e.g., CLOSE, ASSGN, and EXTENT).

SYSIN--Name that can be used when SYSRDR and SYSIPT are assigned to the same card reader, magnetic tape unit, or disk extent.

SYSOUT--Name that must be used when SYSPCH and SYSLST are assigned to the same magnetic tape unit.

Some system logical units must be assigned to certain selected devices. For example, the system logical unit SYSLOG is usually assigned to a 1052 printer-keyboard. If a 1052 printer-keyboard is not available, SYSLOG must be assigned to a printer. SYSLOG can never be assigned to any other physical device.

When the system is generated, the symbolic names for the background problem-program area are assigned to certain standard physical devices. These assignments can be changed by the operator at any time the system will accept operator-to-system communications. Device assignments made by the operator can be either permanent or temporary, i.e., they remain the same from job-to-job or are reset to the standard assignment by the next /& or // JOB statement. The assignments that were made during system generation become effective after an IPL. The system logical unit SYSOUT must be a permanent assignment.

Symbolic Name	Function	May be Assigned to	Remarks
SYSRES	System residence unit	Disk Storage Drive: 2311 or 2314	Assignment is established by the system during an IPL and cannot be altered until another IPL occurs.
SYSRDR	Job control batch job program input device	Card Readers: 1442, 2501, 2520, or 2540 Magnetic Tape Units: 2400 Series (Note 2) Disk Storage Drive: 2311 or 2314	1. Tape units may be either 7- or 9-track (dual density). If 7-track, the data conversion feature is required. 2. If the 1052 printer-keyboard is inoperable, SYSRDR must be assigned to a card reader.
SYSIPT	Processing program input device	Card Readers: 1442, 2501, 2520, or 2540 Magnetic Tape Units: 2400 Series (Note 2) Disk Storage Drive: 2311 or 2314	1. Tape units may be either 7- or 9-track (dual density). If 7-track, the data conversion feature is required. 2. If the 1052 printer-keyboard is inoperable, SYSIPT must be assigned to a card reader. 3. SYSIPT and SYSRDR may be assigned to the same physical device. 4. Required for system generation and maintenance, and language translators.
SYSIN	Assign SYSIPT and SYSRDR to the same physical device	Same units as SYSIPT	1. Tape units may be either 7- or 9-track (dual density). If 7-track, the data conversion feature is required. 2. If the 1052 printer-keyboard is inoperable, SYSIN must be assigned to a card reader.
SYSPCH	Punched output	Card Punches: 1442, 2520, or 2540 Magnetic Tape Units: 2400 Series (Note 2) Disk Storage Drive: 2311 or 2314	1. Tape units may be either 7- or 9-track (dual density). If 7-track, the data conversion feature is required. 2. If the 1052 printer-keyboard is inoperable, SYSPCH must be assigned to a card punch. 3. SYSLST and SYSPCH may be assigned to a single magnetic tape (see SYSOUT). 4. Required for system generation and maintenance, and for language translators.
SYSLST	System output unit	Printers: 1403, 1404, 1443, or 1445 Magnetic Tape Units: 2400 Series (Note 2) Disk Storage Drive: 2311 or 2314	1. Tape units may be either 7- or 9-track (dual density). If 7-track, the data conversion feature is required. 2. 1404 used for continuous forms only. 3. If SYSPCH and SYSLST are assigned to a tape unit, they can be assigned to the same physical device (see SYSOUT). 4. If the 1052 printer-keyboard is inoperable, SYSLST must be assigned to a printer. 5. The 1445 printer must be used as a 1443 printer. 6. Required for system generation and maintenance, and for language functions. 7. SYSLST must be assigned to a printer for foreground dump (SPI mode).
SYSOUT	Assign SYSPCH and SYSLST	2400 Series Magnetic Tapes only (Note 2)	1. Tape units may be either 7- or 9-track (dual density). If 7-track, the data conversion feature is required. 2. If the 1052 printer-keyboard is inoperable, SYSOUT cannot be assigned.
SYSLNK[1]	Compile link edit and execute system file	Disk Storage Drive: 2311 or 2314	1. Must be a single extent.
SYSLOG	Operator messages	Printer-Keyboard: 1052 Printers: 1403, 1404, 1443, or 1445	1. Can be used by any program. 2. If the 1052 printer-keyboard is inoperable, SYSLOG must be assigned to a printer.
SYSSLB SYSRLB	Contains source statement and/or relocatable library	Disk Storage Drive: 2311 or 2314	
SYS000 to SYSmax[3]	I/O operations for processing programs	Card Readers: 1442, 2501, 2520, or 2540 Card Punches: 1442, 2520, or 2540 Printers: 1403, 1404, 1443, or 1445 Magnetic Tape Units: 2400 Series Optical Reader: 1285, 1287 Magnetic Ink Character Readers: 1412, 1419, 1259 Disk Storage Drive: 2311 or 2314 Data Cell Drive: 2321 Paper Tape Readers: 2671 Printer-Keyboard: 1052 Data Collection System: 1030 Data Communication System: 1050 or 1060 Audio Response Units: 7770 or 7772 Selective Calling Stations: AT&T 83B3 Teletypewriter Terminal: AT&T Models 33 and 35 Western Union Plan: 115A Outstation Binary Synchronous Communication: System/360 (Models 30,40,50,65,75) 1130 Computing System, 2780 Data Transmission Terminal	1. SYS000 through SYS009 are the minimum number of units defined in any system. 2. Tape units may be either 7- or 9-track (dual density). If 7-track, the data conversion feature is required. 3. The 1404 printer is used for continuous forms only.

Note 1. SYSLNK cannot be assigned to a foreground program.
Note 2. A tape written in 1600 bpi mode must have a tape mark written on it before this tape can be used on a 7- track or 9- track drive operating in 800 bpi mode.
Note 3. The highest numbered programmer logical unit available for a partition. SYSmax is not a symbolic name.

● Figure 2. Symbolic Unit Names

MESSAGES FROM THE SYSTEM

The system communicates with the operator by issuing messages on SYSLOG, normally assigned to the IBM 1052 Printer-Keyboard. If no response or action is required, an I-indicator is included in the message and processing continues. If an operator action or reply is required, an action indicator A or D is included in the message. The program issuing the message usually waits until the operator keys in a response. An exception would be a message indicating intervention-required action for a specific device, where the operator need only satisfy the condition (e.g. reader out of cards).

The system-to-operator messages have two basic forms. The first form (illustrated here) consists of a two-character program identifier (prefix), followed by a four-character message code, and comments. The comments can extend to more than one line but the program identifier and message code are not repeated on succeeding lines.

```
BG xxxxc [...Comments...]
         [...Comments...]
```

The following program identifiers are used in multiprogramming.

Identifier	Program
BG	Background program
F1	Foreground-one program
F2	Foreground-two program
AR	Attention routine
SP	Supervisor

The second form of system-to-operator message consists of two lines. The first line contains the program identifier and is followed by any comments. The second line consists of the message code and message.

```
BG [...Comments...]
xxxxc [...Message...]
```

The message code is further divided as follows. The first character of the message code indicates the message origin, which can be one of the following.

0xxx Supervisor or IPL	7Dxx Disk Sort/Merge
1xxx Job Control	7Txx Tape sort/Merge
2xxx Linkage Editor	8xxx Utilities
3xxx Librarian	9xxx Autotest
4xxx Logical IOCS	Axxx Assembler
5xxx PL/I	Bxxx FORTRAN
6xxx RPG	Cxxx COBOL

The second, third, and fourth characters of the message code are the message number. The action indicator (c) following the message number specifies the type of operator action required.

The message itself contains all information pertaining to the operator's decision and/or action. Each operator message is listed under System-to-Operator Messages with a corresponding cause and action description.

A typical system-to-operator message in multiprogramming format is:

```
BG 1C10A PLEASE ASSIGN SYSRDR
```

The characters, BG, indicate that this message was issued for a background program. The character, 1, indicates that Job Control issued the message. The characters, C10, are the message number. The character, A, indicates that operator action is required. (For example, the operator would respond by typing the assignment for SYSRDR on the 1052.) PLEASE ASSIGN SYSRDR is the content of the message.

When the operator is to respond to a message (or a series of messages) and there is no program-identifier prefix on the 1052, the response made is for the last message printed.

When a Supervisor routine such as OPEN or device-error-recovery is operating on behalf of a program, any messages issued contain the identifier for the partition issuing the message.

The action indicators are as follows.

Action Indicator	Meaning
A-Action:	The operator must perform a specific manual action before continuing; for example, mounting a magnetic tape, or readying an I/O device.
D-Decision:	The operator must make a choice between alternate courses of action.
I-Information:	The message does not require immediate operator action. For example, this type of message can be

used to indicate the successful termination of a problem program.

W-Wait: Used when an error condition (such as an error on SYSRES) occurs that makes it impossible to continue processing. This indicator is not printed on the printer-keyboard. Instead, a two-digit message is placed in byte 0 of main storage. The indicator W is placed in byte 1 of main storage. (See low-core error messages under System-to-Operator Messages.) The Wait state is entered, and all interruptions are disabled. The only way that the system can be restarted is to perform an IPL procedure.

S-SEREP: Used when a machine condition occurs that makes it impossible to continue processing. This indicator is not printed on the printer-keyboard, but may be displayed on the console. A two-digit message is placed in byte 0 of main storage. The indicator S is stored in byte 1 of main storage. A special diagnostic storage-display program (SEREP) supplied to customer engineers should be used when an S-condition occurs (see Appendix G and low-core error messages under System-to-Operator Messages).

COMMUNICATION TO THE SYSTEM

There are two means of communicating with the system: job-control statements and operator commands (see Appendix B). Job-control statements are distinguished by the double slash (//), in columns 1 and 2. Operator commands do not have this characteristic. The following table shows the differences between these two forms of communication.

	Job-Control Statement	
//	Operation Code	Operand(s)
	Operator Command	
	Operation Code	Operand(s)

Operator commands apply to either background (where applicable) or foreground programs. They may be entered through either SYSRDR or SYSLOG. Job-control statements are issued for batched job processing programs only and are normally entered through SYSRDR. Because operator commands are acceptable at any time operator-to-system responses are enabled, it is preferable to use the command whenever possible. If an operator forms this habit, it is not necessary for him to remember when job-control statements are acceptable. Operator commands, if entered in accordance with their prescribed format, always produce the desired system action.

The operator communicates with the system by entering certain commands into the system. Commands are usually entered by using the 1052 printer-keyboard (SYSLOG). Communication is possible in any of the following instances.

- The operator has pressed the REQUEST key (see Using the Request Key).
- The programmer or operator has requested operator response by inserting a PAUSE statement in the input stream for a problem program running in a batch job environment. (A PAUSE statement in the input job stream is not valid for SPI programs.)
- The operator is responding to Job Control action or decision type messages.

Once a command has been processed, the printer-keyboard is unlocked to permit the operator to issue further messages. Operator-to-system Job Control commands are recognized on SYSRDR as well as on SYSLOG.

Each operator-to-system command consists of an operation code and one or more operands. The operation code describes the pending action and consists of from one to eight alphabetic characters. The operation code must be separated from the first operand by at least one blank. Any operands that follow are separated by commas.

There are four types of operator-to-system commands. A listing of all operator-to-system commands is shown in Appendix C (Figures 13 through 16). A

description of all commands is contained in Operator Command Formats.

1. Job Control--issued between jobs or job steps for batch processing in a multiprogramming environment.

2. Attention (ATTN)--issued at any time by pressing the request key on the 1052 printer-keyboard. Some of these commands can be issued only in a multiprogramming environment.

3. Single Program Initiation--may be issued only in a multiprogramming environment following the ATTN command: START [F1 or F2].

4. IPL--Initial Program Loading

By using the appropriate operator-to-system command, the operator can perform the following operations.

- Temporarily suspend processing. The PAUSE statement or command causes the system to pause between jobs (or job steps), while operating in a batch mode. A programmer may use a // PAUSE statement to request operator action.

- End-of-block. The end-of-block character Ⓔ signifies the end of each operator command entered through the 1052 printer-keyboard. It is entered by holding the alter code key down and typing a 5.

- Resume processing. The end-of-communications character Ⓑ signifies the end of all operator commands and causes processing to continue. It is entered into the 1052 by holding the alter code key down and typing a 5.

- Cancel jobs. The CANCEL command, which can be issued at any time during the execution of a background, foreground-one, or foreground-two program, terminates the execution of that job after all outstanding interruptions have been handled.

- Change input/output device assignments. The ASSGN (ASSiGN) command assigns a symbolic name to a physical input/output device. The DVCDN (DeViCe DowN) command informs the system that a device is inoperative. The DVCUP (DeViCe UP) command informs the system that a formerly inoperative device is now operational. The RESET command resets temporary input/output assignments to the standard established at system generation time. Any temporary modifications made by the operator are also reset by this command.

- Perform magnetic tape operations. The MTC (Magnetic Tape Control) command performs magnetic tape operations such as rewinding tapes, rewinding and unloading tapes, etc.

- Closing files. The CLOSE command closes any magnetic tape unit assigned to SYSLST, SYSPCH, SYSOUT, SYSnnn, or to any disk file assigned to SYSRDR, SYSIPT, SYSIN, SYSPCH, or SYSLST, and allows a new device assignment to be made.

- Get information from the system. The LISTIO command prints a listing of input/output device assignments. The LOG command prints all job-control statements and/or SPI commands as they occur on SYSLOG. (The NOLOG command suppresses the logging of most job-control statements or SPI commands.)

- Set system values.
  During IPL:
  SET--Sets the value for date and time
  ADD--Adds device to PUB table
  DEL--Deletes device from PUB table
  Between job steps:
  SET--Sets the values for line count, UPSI bytes, time, date, record count for SYSLST=disk and SYSPCH=disk.
  The SET, ADD, and DEL commands are described in the section Starting The System (IPL Procedure).

- Multiprogramming. The ALLOC, BATCH, HOLD, MAP, RELSE, START, STOP, UNA, and UNBATCH commands are valid only in a multiprogramming system.

  ALLOC--Allows the operator to allocate main storage partitions to the desired sizes.
  BATCH--Initiates batch job processing in BG, F2, or F1, or continues batch processing in BG, F2, or F1 after a STOP command.
  HOLD--Holds the current I/O assignments for the foreground area(s) until released by RELSE command.
  MAP--Prints the current main storage partitions on SYSLOG.
  TIMER--Internal timer support.
  RELSE--Sets the current I/O assignments for the specified foreground area(s) to unassigned at the completion of the active program for that area.
  START--Starts SPI in F2 or F1 or continues processing after a STOP command.
  STOP--Halts batch job operation temporarily. Job Control does not issue a read command to SYSLOG.

Batch job operation can be resumed following a STOP command by issuing either a BATCH or START command.

MSG--Gives control to a foreground program operator communication routine.

UNA--Causes physical units currently assigned to a foreground area(s) under the HOLD command to be unassigned. The specified foreground area must be inactive.

UNBATCH--Terminates batch job operation and releases partitions. All logical I/O units are unassigned.

These commands are described in greater detail in Operator Command Formats. Although the normal communication device is SYSLOG (1052 printer-keyboard), operator-to-system commands (except multiprogramming commands) are also recognized on SYSRDR.

USING THE REQUEST KEY

While processing in either the background or foreground problem areas, the 1052 printer-keyboard is locked. If the operator presses the request key, message 1I60A READY FOR COMMUNICATIONS is printed. The keyboard is then unlocked and any valid ATTN command can be entered.

The attention request is ignored if:

1. The system is executing a condense function.

2. The system is executing a re-allocation function.

If the logical transient area in the Supervisor is active when the request is made, the request is held until the logical transient area is released by the problem program. There are some program failures that will never release the logical transient area. For example, the logical transient area will not be released if there is a loop in a user-label routine while opening a file. In such a case, the attention key may be pressed again. The following message will be issued:

1I40D REQUEST CANCEL

The operator may either ignore the message (respond Ⓑ) or respond with the CANCEL operation command. If the message is ignored, the original request remains pending.

The valid operator-to-system commands are listed in Figure 3.

Some entries in the operand field of operator-to-system commands are represented in hexadecimal form. The hexadecimal form is signified by X'cuu'. The letters cuu represent the physical address of a device and can be the numeric characters 0-9 and the alphabetic characters A-F.

Each operator-to-system command is described in the following section. The conventions used to illustrate these commands are as follows:

1. Uppercase letters and punctuation marks (except as described in items 3 and 4 below) represent information that must be coded exactly as shown.

2. Lowercase letters and terms represent information that must be supplied by the operator.

3. Information contained within brackets [ ] represents an option than can be included or omitted depending on the requirements of the program.

4. Options contained within braces { } represent alternatives, one of which must be chosen.

5. Options that are underlined indicate the assumed value if no operand is provided.

ADD -- Add a Device to the PUB Table

ADD is an optional control command that is used to add a device (not assigned during system generation) to the PUB table. It is read from the operator communication device (either the 1052 or a card reader) and is acceptable only during the IPL procedure. The format of the ADD command is:

Operation	Operand
ADD	X'cuu'[(k)],devicetype[,X'ss']

X'cuu'= channel and unit numbers.

k= S, if the device can be switched (attached to two adjacent channels). The designated channel (X'cuu') is the lower of the two channels.

k= 0-255 indicates the priority of a device that cannot be switched. The highest priority is 0. If k is not given, a priority of 255 is assumed. In a multiprogramming environment, all devices on a channel automatically have equal priority.

devicetype = (see following)
- 1050A for 1052 printer-keyboard
- 1285 for 1285 optical reader
- 1287 for 1287 optical reader
- 1403 for 1403 printer
- 1403U for 1403 printer with UCS feature
- 1404 for 1404 printer
- 1412 for 1412 magnetic ink character reader
- 1419 for 1259 or 1419 magnetic ink character reader
- 1419P for 1419 primary control unit address on duel address adapter
- 1419S for 1419 secondary control unit address on duel address adapter
- 1442N1 for 1442N1 card reader punch
- 1442N2 for 1442N2 card punch
- 1443 for 1443 printer
- 1445 for 1445 printer
- 2260 for 1. Local display station (no X'ss' operand required) 2. 1053 attached to 2848 (X'ss' operand required)
- 2311 for 2311 Disk Drive (DASD)
- 2314 for 2314 Disk Drive (DASD)
- 2321 for 2321 Data Cell Drive (DASD)
- 2400T7 for 7-track magnetic tapes
- 2400T9 for 9-track magnetic tapes
- 2501 for 2501 card reader
- 2520B1 for 2520B1 card reader punch
- 2520B2 for 2520B2 card punch
- 2520B3 for 2520B1 card punch
- 2540P for 2540 punch
- 2540R for 2540 card reader
- 2671 for 2671 paper tape reader
- 2701 for 2701 Data Adapter Unit. The code '2701' should be used only for lines with the following Adapters:
  IBM Terminal Adapters Types I, II, and III
  Synchronous Data Adapter Type II
  Telegraph Terminal Adapters Types I and II

COMMAND	MEANING	IPL[1]	JC[2]	AR[3]	SPI[4]	WHEN ACCEPTED
ADD	Add a device to the PUB table.	X				During IPL SET date and clock only
DEL	Delete a device from the PUB table.	X				
SET	Set values in the communication area.	X[5]	X			
CLOSE	Close magnetic tape input or output file or 2311.		X			Between Jobs and Job Steps
DVCDN	Device down (not available to system).		X			
DVCUP	Device up (now available to system).		X			
MTC	Magnetic tape control		X			
RESET	Reset temporary I/O device assignments to system standard.					
STOP[7]	Stop execution of background job.		X			
UNBATCH[7]	Terminate batch processing		X[6]			
UCS	Load universal character set buffer		X			
ALLOC[7]	Allocate core storage.		X	X		Between Jobs and Job Steps and after pressing the request key on 1052
MAP[7]	List core storage allocations.		X	X	X	Between Jobs and Job Steps, after pressing the request key on 1052, and as response to system message, and during single program initiation
PAUSE	Suppress processing (enter WAIT state).		X	X	X	
LOG	Log (print) job control statements.		X	X	X	
NOLOG	Suppress logging control statements.		X	X	X	
CANCEL	Cancel execution of current job.		X	X	X	
Ⓑ	End-of-block or communications	X	X	X	X	During IPL between Jobs and Job Steps, after pressing the request key on 1052, and as response to system message, and during single program initiation
Ⓒ	Cancel terminal response (1052).	X	X	X	X	
ASSGN	Assign logical name.		X		X	Between Jobs and Job Steps and during single program initiation.
HOLD[7]	Hold current foreground assignments.		X		X	
LISTIO	List current I/O assignments.		X		X	
RELSE[7]	Release current foreground assignments and unassign them at the end of any job initiated for that area.		X		X	
UNA[7]	Set all assignments for foreground area to unassigned. The specified area must be inactive.		X		X	
MSG[7]	Give control to a foreground communication routine.			X	X	After pressing the request key on the 1052 and during single program initiation
TIMER	Transfers timer support to indicated program.			X	X	
START[7]	Initiates a foreground program or resumes batch processing.			X		After pressing request key on 1052
BATCH[7]	Initiate batch processing.			X[6]		
DLAB	Disk label information.				X	During Single Program Initiation
DLBL	Disk label information.				X	
EXEC	Initiate single program execution.				X	
EXTENT	Disk extent information.				X	
LBLTYP	Label information.				X	
READ[7]	Specifies a card reader from which further single program initiation commands are read.				X	
TLBL	Tape label information.				X	
TPLAB	Tape label information.				X	
VOL	Disk volume information.				X	
XTENT	Disk extent information				X	

1. Initial Program Loader (IPL).
2. Job Control (JC).
3. ATTN Routine (AR).
4. Single Program Initiation for F1 or F2.
5. Date and clock only.
6. Valid only if batch job foreground option was specified at system generation.
7. Valid only in a multiprogramming system.

● Figure 3. Valid Operator Commands

2702 for 2702 Transmission Control Unit.
2703 for 2703 Transmission Control Unit
7770 for 7770 Audio Response Unit
7772 for 7772 Audio Response Unit
UNSPB for unsupported device attached to Channel 0, which is either overrunnable or operates in burst mode.
UNSP for unsupported device. If attached to Channel 0, it is not overrunnable and does not operate in burst mode.

X'ss'= Device specifications. X'01' must be coded when the device type is a 2260 for 1053 attached to a 2848 Local. If absent, the following values are assumed, depending on the value specified in the DVCGEN macro at system generation time or by the ADD command at IPL time.

X'C0' for 9-track tapes
X'90' for 7-track tapes
X'00' for non-tapes

There are two possible device specifications for 9-track tape units -- X'C0' and X'C8'. By definition, C0 is the normal reset mode for the device. C8 is an alternate mode setting for 9-track dual-density tapes only. When the system is generated, it is possible to make an explicit selection of mode setting for each magnetic tape unit, or let the system take a standard action. If the latter action is chosen, the system will always assume C0 for the device.

X'00', X'01', X'02', and X'03' are invalid as X'ss' for magnetic tape. This parameter is used to specify SADxxx requirements for 2702 lines:

X'00' for SAD0
X'01' for SAD1
X'02' for SAD2
X'03' for SAD3

The previous information is not accepted on the ASSGN statement.

The tape specifications are:

Density (Bytes Per Inch)	Parity	Convert Feature	Translate	ss
200	odd	on	off	10
200	odd	off	off	30
200	odd	off	on	38
200	even	off	off	20
200	even	off	on	28
556	odd	on	off	50
556	odd	off	off	70
556	odd	off	on	78
556	even	off	off	60
556	even	off	on	68
800	odd	on	off	90
800	odd	off	off	B0
800	odd	off	on	B8
800	even	off	off	A0
800	even	off	on	A8
800	single-density 9-track tapes			C0
1600	single-density 9-track tapes			C0
1600	dual-density 9-track tapes			C0
800	dual-density 9-track tapes			C8

For 1412/1419/1259 magnetic ink readers, X'ss' designates the external bits associated with this reader. These bits correspond to external interrupt PSW bits 26 through 31, respectively. For a 1419 equipped with the dual address adapter, this parameter is needed for both the primary and secondary control units (1419P and 1419S). The possible combinations for the device specification for the 1412/1419 are:

Device Specification	External Line Number
X'01'	7
X'02'	6
X'04'	5
X'08'	4
X'10'	3
X'20'	2

The end-of-block character Ⓑ (alter code 5) must be given after each ADD command if the communication device is a printer-keyboard.

ALLOC -- Allocate Main Storage Command

The ALLOC command permits the operator to allocate main storage among foreground programs (Figure 4). Any remaining storage is automatically assigned to the background area. The number of bytes to be allocated for one or both foreground areas is specified in 2K (2048 bytes) increments. If only one foreground area is referenced, it is assumed that the amount of storage allocated to the other remains unchanged. Batched-job areas can never be less than 10K. For COBOL and Assembler with tape or disk work file variants, the batched-job area should never be less than 14K.

Operation	Operand
ALLOC	{F1=nK[,F2=nK]} {F2=nK[,F1=nK]}

The value n must be an even integer.

The following considerations apply to storage allocation among foreground and background programs.

1. The storage areas must always be contiguous.
2. The maximum size of a foreground area is 510K. This restriction does not apply to the background area.
3. To delete a foreground area from the system, an ALLOC command must be given specifying an area of 0K (zero K).
4. If storage allocation was specified when the system was generated, the IPL routine determines the size of main storage and allocates the specified foreground areas downward from high main storage.

Storage will not be allocated in the following instances.

Rule 1. The allocation would cause a decrease in the storage allocated to an active foreground or background program.

Rule 2. The allocation would result in the relocation of an active foreground program.

Rule 3A. A Job Control allocation would reduce the background area (or foreground area(s) while operating in the batched foreground mode) to less than 10K bytes.

<table>
<tr><td rowspan="3">Supervisor

Storage Protection Key: 0</td><td colspan="2">Permanent Storage Locations Used by CPU
Program Information Block (PIB)</td></tr>
<tr><td colspan="2">Communications Region</td></tr>
<tr><td colspan="2">EXCP Routine
I/O Interruption Routine
Start I/O Routine
Channel Scheduler

Storage Protection (required for multiprogramming)

Supervisor Call Routine
Program Check Routine
Machine Check Routine
External Interruption Routine

Timer Services (optional)

System Loader (Program FETCH and LOAD)

Resident Error Processing Routines

I/O Units Control Tables
(LUB/PUB/JIB/TEB)</td></tr>
<tr><td>Transient Areas

Storage Protection Key: 0</td><td colspan="2">Open
Close
Dump
Operator Communications
Checkpoint
End of Job
Error Processing Routines
Attention Routine</td></tr>
<tr><td>Background Program Area

Storage Protection Key: 1

Minimum Size: 10K</td><td colspan="2">Job Control

Linkage Editor

Librarian

Installation Processing Programs</td></tr>
<tr><td rowspan="4">Foreground - two Program Area

Storage Protection Key: 2

Size: 2K Increments

To 510K</td><td>SPI</td><td>Batch Mode</td></tr>
<tr><td>Save Area
Prog Name
Return PSW
Registers</td><td rowspan="3">Job Control

Minimum Size: 10K
Installation Processing Programs</td></tr>
<tr><td>Label Area (optional)</td></tr>
<tr><td>Installation Processing Programs</td></tr>
<tr><td rowspan="4">Foreground - one Program Area

Storage Protection Key: 3

Size: 2K Increments

To 510K</td><td></td><td></td></tr>
<tr><td>Save Area
Prog Name
Return PSW
Registers</td><td rowspan="3">Job Control

Minimum Size: 10K
Installation Processing Programs</td></tr>
<tr><td>Label Area (optional)</td></tr>
<tr><td>Installation Processing Programs</td></tr>
</table>

●Figure 4. Main Storage Organization

Rule 3B. An ATTN allocation would reduce the background area, which is always considered active when allocating storage from the ATTN routine.

Figure 5 shows some examples of valid and invalid storage allocations that could be made by the operator. The operator can issue the MAP command to print on SYSLOG the areas of main storage allocated to programs operating in a multiprogramming environment.

The allocation command shifts the boundary allignment between partitions. For example, assume that the system has 64K with a 10K Supervisor. If the following allocation is made

ALLOC F1=16K,F2=16K

the boundary allignment will be:

AREA	No. K	UPPER LIMIT
SP	10K	10239
BG	22K	32767
F2	16K	49151
F1	16K	65535

If the MAP command is issued following the preceding allocation, a storage map similar to that printed here appears on SYSLOG.

All programs run in either foreground partition must be linkage edited for the starting boundary for the partition and cataloged into the core image library. In the preceding example, all programs initiated for F2 or F1 must be linkage edited for 32K and 48K, respectively.

NOTE: The operator should be aware that program phases previously cataloged into the core image library may not be executable if the boundary alignment is changed by the ALLOC command.

ASSGN -- Assign Logical Name Command

The ASSGN command is used to assign a logical I/O unit to a physical device. It can be used to change any device assignment that was previously specified. Its form is:

Operation	Operand
ASSGN	SYSxxx,address [{,X'ss' / ,ALT}] [,TEMP]

The entries in the operand represent the following:

SYSxxx Symbolic unit name, which may be one of the following:

SYSRDR*
SYSIPT*
SYSIN*
SYSPCH*
SYSLST*
SYSOUT*
SYSLNK**
SYSLOG
SYSSLB*
SYSRLB*
SYS000-SYSmax***

* These system logical units may only be assigned to unit record devices for SPI. SYSIPT or SYSRDR is assigned to a card reader or reader punch, SYSPCH to a card punch or reader punch, and SYSLST to a printer.

** Background only.

***SYSmax is not an operand of the ASSGN command. It represents the highest numbered programmer logical unit available for a partition.

Assignments for SYSOUT must be permanent (that is, not reset between jobs), and are only valid for a tape unit. If a system unit is assigned to a tape or DASD device, the unit must be closed before it is free for another assignment. A system or programmers logical unit must be permanently unassigned prior to any subsequent assignment to another partition (for example, from BG to F1).

SYSxxx can only be SYS000 through SYS221 for either foreground area. The address can be expressed as X'cuu', UA, or IGN.

X'cuu' Indicates the channel and unit number (in hexadecimal).
c = 0 for multiplexor channel
c = 1-6 for selector channels 1-6
uu = 00-FE (unit number; 0-254 in hexadecimal)

UA Indicates the logical unit is to be unassigned. Any operation attempted on an unassigned device results in job cancellation.

IGN Indicates that the logical unit is to be unassigned, and that all program references to the logical device, by anything other than LIOCS, are to be ignored. The IGN operand must not be specified for files processed by logical IOCS, or the job is canceled when the file is opened. This operand is not valid for SYSRDR, SYSIPT or SYSIN.

TEMP Specifies a temporary assignment for batched-job programs only.

X'ss' Device specifications (used to specify mode settings for 7-track and 9-track tapes). If X'ss' is not specified, the following values are assumed depending upon the value specified in the DVCGEN macro at system generation time or in the ADD command at IPL time.

X'C0' for 9-track tape
X'90' for 7-track tape

(For additional information, refer to device specifications under ADD command.) The LISTIO command may be used to determine the current mode settings for all magnetic tape units. The specifications are as shown here.

ALT Indicates an alternate magnetic tape unit that is used when the capacity of the original assignment is reached. The characteristics of the alternate unit must be the same as those of the original unit. Multiple aternates may be assigned to a symbolic unit.

Note: The ALT operand is not valid for any system input file (e.g., SYSRDR, SYSIPT, SYSIN). It is also invalid for SYSLNK and SYSLOG.

Present Program Allocation	Area	Area Status	New Allocation	Result	Reason
10K 4K	BG F1	Active	F1=2K	Invalid	Rule 1.
10K 2K 4K	BG F2 F1	Active Inactive	F1=6K F2=2K F1=2K F2=4K	Invalid Invalid Valid	Rule 2. Active program in F2 must be relocated to expand F1. Rule 2. Active program in F2 must be relocated to maintain contiguous storage between F1 and F2. Storage added to active program while maintaining contiguous areas.
10K 2K	BG F2	Active	F2=4K	Invalid	Rule 3a or 3b.

● Figure 5. Storage Allocation Examples

Device Specifications:

ss	Bytes per Inch	Parity	Translate Feature	Convert Feature	
10	200	odd	off	on	Valid
20	200	even	off	off	
28	200	even	on	off	
30	200	odd	off	off	for
38	200	odd	on	off	
50	556	odd	off	on	
60	556	even	off	off	7-track
68	556	even	on	off	
70	556	odd	off	off	
78	556	odd	on	off	tape
90	800	odd	off	on	
A0	800	even	off	off	
A8	800	even	on	off	only
B0	800	odd	off	off	
B8	800	odd	on	off	
C0	800	single-density 9-track tapes			
C0	1600	single-density 9-track tapes			
C0	1600	dual-density 9-track tapes			
C8	800	dual-density 9-track tapes			

If more than one temporary assignment is made to the same logical unit but to a different physical unit to set the mode for tape within a job, only the last mode setting is reset at end-of-job. For example, consider the following three assignments:

```
ASSGN SYS001,X'180',X'68'

ASSGN SYS001,X'180',X'A8',TEMP

ASSGN SYS001,X'181',X'A8',TEMP
```

At end-of-job, the temporary mode setting for device 180 is not reset. This situation can be avoided if SYS001,X'180' is reset before reassigning this unit to 181. Either a // RESET statement or a RESET command may be used.

BATCH -- Batch Command

The BATCH command is used to start batch processing in either foreground partition or to continue batch processing in the background. (For additional information, refer to Initiating Batch Processing in a Foreground Area.) If the specified partition is available, Job Control will read the operator's next command from SYSLOG. The operator can give command to another input device by typing ASSGN SYSRDR, X'cuu' followed by the end-of-communications B indication.

If the specified partition was temporarily halted by a STOP command, it is made active, and the attention routine communication with the operator is terminated following a BATCH command. If the partition is active, processing continues, and an invalid statement message follows. When the partition is free, the BATCH command should be re-entered.

Operation	Operand
BATCH	(blank) {BG {F1 {F2

CANCEL -- Cancel Command

The CANCEL command with a blank operand can be used in any partition to:

- Cancel single program initiation. When this command is issued, all previous SPI commands are ignored and control is returned to the Supervisor.
- Cancel a job operating in a multiprogramming environment. The job is canceled after all outstanding interruptions are handled. When this command is issued for the background or foreground area operating in batched mode, SYSRDR (and SYSIPT if assigned to a device other than SYSRDR) is read up to the first statement following the /& control statement (if the job begins with a // JOB statement). If a job does not begin with a // JOB statement and it is canceled before detecting a /& statement, the remaining job-control statements will not be automatically bypassed. To bypass these statements, the operator should type on the 1052 printer-keyboard the following commands:

```
// JOB xxxxxxxx
CANCEL Ⓑ Ⓑ
```

The remaining job-control statements are then bypassed up to the statement immediately following the next /&.

The CANCEL command with an operand is used while in the ATTN routine to cancel either the background job or either foreground job. The form of the CANCEL command is as follows.

Operation	Operand
CANCEL	(blank) / BG / F1 / F2

The operands BG, F1, and F2 must be used in the ATTN rcutine only (message prefix AR).

BG Indicates the background job is to be canceled.

F1 Indicates the foreground-one program is to be canceled.

F2 Indicates the foreground-two program is to be canceled.

If operand is blank, BG is assumed.

© -- Cancel 1052 Response Command

The © (Alter Code 0) command cancels the 1052 response and allows the operator to enter a new response. This command is useful if the operator has detected an error and wishes to correct it. The form of the command is:

Operation	Operand
©	blank

© is alter code 0.

CLOSE -- Close Unit Command

The CLOSE command is used to close either a system or programmer output logical unit assigned to a magnetic tape, or a system logical unit assigned to a disk. The logical unit may be optionally reassigned to another device, unassigned, or, in the case of a magnetic tape file, switched to an alternate unit. Note that when SYSxxx is a system logical unit (SYSLST, SYSPCH, etc.), one of the optional parameters must be specified. When closing a programmer logical unit (SYS000-SYSmax), no optional parameter is required. When none is specified, the programmer logical unit is closed and the assignment remains unchanged. Closing a magnetic tape unit consists of writing a file mark, an EOV trailer record, two file marks, and rewinding and unloading the tape.

Operation	Operand
CLOSE	SYSxxx [(,X'cuu'[,X'ss'] / ,UA / ,IGN / ,ALT)]

SYSxxx For 2311 or 2314: SYSIN, SYSRDR, SYSIPT, SYSPCH, or SYSLST. For magnetic tape: SYSPCH, SYSLST, SYSOUT, or SYS000-SYSmax.

X'cuu' Specifies that after the logical unit is closed, it will be assigned to the channel and unit specified. c is the channel number (0-6) and uu is the unit number 00-FE (0-254) in hexadecimal. In the case of a system logical unit, the new unit will be opened if it is either a disk, or a magnetic tape positioned at load point.

X'ss' Device specifications (used to specify mode settings for 7-track and 9-track tapes). If X'ss' is not specified, the mode settings remain unchanged. The LISTIO command may be used to determine the current mode settings for all magnetic tape units.

UA Specifies that the logical unit is to be closed and unassigned.

IGN Specifies that the logical unit is to be closed and unassigned with the ignore option. This operand is invalid for SYSRDR, SYSIPT, or SYSIN.

ALT Specifies that the logical unit is to be closed and an alternate unit is to be opened and used. This operand is valid only for system output logical units (SYSPCH, SYSLST, or SYSOUT).

DEL -- Delete A Device From the PUB Table

DEL is an optional control statement that is used to delete a device from the PUB table. It is read from the operator communication device (either the 1052 or a card reader) and is acceptable only during the IPL procedure. Its form is:

Operation	Operand
DEL	X'cuu'

where cuu is the channel and unit numbers of the device to be deleted.

The end-of-block (B) (alter code 5) must be given after each DEL statement if the communication device is a printer-keyboard.

DLAB -- DASD Label Information Command

The DASD label command (completed on a continuation line) contains file label information for DASD label checking and creation. This command must immediately follow the volume (VOL) command and precede the XTENT command. Any deviation from this sequence results in a statement out of sequence error message. If a mistake is made while entering the continuation line on the 1052, both lines of the DLAB command must be re-entered. The DLAB command and its continuation line have the following format.

Op	Operand	
DLAB	'label fields 1-3',	C
	xxxx,yyddd,yyddd,'systemcode'[,type]	

'label fields 1-3'
The first three fields of the Format-1 DASD file label are contained just as they appear in the label. This is a 51-byte character string, contained within apostrophes and followed by a comma. The entire 51-byte field must be contained in the first of the two statements. Column 72 must contain a continuation character. The Format-1 label is shown in Appendix D (Figure 17). Fields 1-3 are:

File Name. 44-byte alphameric including file ID and, if used, generation number and version number of generation.

Format Identifier. 1-byte, EBCDIC 1.

File Serial Number. 6-byte alphameric, must be the same as the volume serial number in the volume label of the first or only pack of the file.

C
Continuation character in column 72.

xxxx
Volume Sequence Number. This 4-digit EBCDIC number is the equivalent of the 2-byte binary volume sequence number in field 4 of the Format 1 label. This number must begin in column 16 of the continuation statement. Columns 1-15 are blank.

yyddd,yyddd
The File Creation Date, followed by the File Expiration Date. These two 5-digit numbers are the EBCDIC equivalent of the 3-byte discontinuous binary dates in fields 5 and 6 of the Format 1 label. yy is the year (00-99), and ddd is the day of the year (001-366).

'systemcode'
This field is never used by the Disk Operating System. A string of 13 characters or blanks must be enclosed within apostrophes as shown.

type
Indicates the type of file label (SD, DA, ISC, or ISE). SD is assumed if this entry is omitted.

DTFSD or DTFPH with Mounted = single: type = SD or blank

DTFDA or DTFPH with Mounted = ALL: type = DA

DTFIS using Load Create: type = ISC

DTFIS using other than Load Create: type = ISE.

DLBL -- DASD Label Information Command

The DLBL command replaces the VOL and DLAB combination used in earlier systems. It contains file label information for DASD label checking and creation. The DLBL command must not be followed by the XTENT command. The current system will, however, continue to accept the VOL, DLAB and XTENT combination. The DLBL command has the following format:

Op	Operand
DLBL	filename,['file-ID'],[date],[codes]

filename
From one to seven characters and identical to the symbolic name of the program DTF, which identifies the file.

'file-ID'
The name associated with the file on the volume. From 1 to 44 bytes of alphameric data, contained

within apostrophes, including file-ID and, if used, generation number and version number of generation. If fewer than 44 characters are used, the field is left justified and padded with blanks. If this operand is omitted, "filename" is used.

date — From 1 to 6 characters indicating either the retention period of the file (in the format d through dddd) or the absolute expiration date of the file (in the format yy/ddd). ddd cannot exceed 366. If this operand is omitted for an output file, a 7-day retention period is assumed and the current date is the creation date. If present, this operand is ignored for an input file.

codes — A 2-3 character field indicating the type of file label as follows:

SD for sequential disk or for DTFPH with MOUNTED=SINGLE.

DA for direct access or for DTFPH with MOUNTED=ALL.

IS C for indexed sequential using Load Create.

IS E for indexed sequential using Load Extension, Add, or retrieve.

If this operand is omitted, SD is assumed.

Additional fields in the standard disk file label are filled with default options for output files and "DOS/360 VER 3" is used as the system code.

DVCDN -- Device Down Command

The DVCDN (DeViCe DowN) command specifies that a device is no longer physically available for system operation. If a standard or temporary assignment was made to the specified device, the symbolic unit(s) is unassigned when the command is accepted. If an alternate assignment was made, the alternate is removed. A DVCUP command must be issued before any subsequent references to this device. This command is used when a device is being serviced or when a device is inoperative.

The DVCDN command uses the logical transient area, and will prevent operator communication until this area is free.

Operation	Operand
DVCDN	X'cuu'

The operand entry X'cuu' is expressed in hexadecimal form, where c is the channel number (0-6) and uu is the unit number, 00-FE (0-254 in hexadecimal).

DVCUP -- Device Up Command

The DVCUP (DeViCe UP) command is used to inform the system that a device, which was inoperative, is now available for system operations. An ASSGN operator command (or job-control statement) must be used to reassign this device.

The DVCUP command uses the logical transient area, and will prevent operator communication until this area is free.

Operation	Operand
DVCUP	X'cuu'

The operand entry X'cuu' is expressed in hexadecimal form, where c is the channel number (0-6) and uu is the unit number, 00-FE (0-254 in hexadecimal).

Ⓑ -- End-of-Block Command

The end-of-block command, Ⓑ, must be issued after each operator command. Whenever the operator has finished communicating with the system, an additional Ⓑ must be issued, which causes the communication routine to return control to the mainline job. When SPI commands are entered through a card reader (as a result of a READ command), and an invalid command is encountered, an error message is printed on the printer-keyboard. It is now possible for the operator to enter valid commands through the 1052 printer-keyboard. The end-of-communications command, Ⓑ, causes input reading to be switched back to the device specified in the READ command.

Operation	Operand
Ⓔ	blank

Ⓑ is alter code 5.

1. End-of-block -- issued after each command

2. End-of-communication -- issued after final end-of-block to resume processing, or as the first character of an operator response to a message. The BATCH, START, MSG, and CANCEL commands also terminate the ATTN routine.

EXEC -- Execute Single Program Initiation Command

The EXEC command is used to specify the SPI program to be executed. The program must be cataloged in the core image library of the system. This command terminates the SPI routines and causes the named foreground program to be loaded into main storage.

Operation	Operand
EXEC	progname

progname — Represents the name of the program in the core image library to be executed. The program name can be one to eight alphameric characters.

When control is given to the foreground program, register 2 contains the address of the uppermost byte of storage available to the program.

EXTENT -- DASD Extent Information Command

The EXTENT command defines each area (or extent) of a DASD file. One or more EXTENT commands must follow each DLBL command, (except for single volume input files for Sequential Disk) on either a 2311 or 2314, for which the DEVADDR parameter was specified in the DTF table. The format of the EXTENT command is as follows.

Operation	Operand
EXTENT	[symbolic-unit], [serial-number], [type], [sequence-number], [relative-track], [number-of-tracks], [split-cylinder-track], [B=bins]

symbolic unit — A six-character field indicating the symbolic unit (SYSxxx) of the volume for this extent. If this operand is omitted, the symbolic unit of the preceding EXTENT command is used. This operand is not required for a single volume, IJSYSxxx filename or for a file defined with the DTF DEVADDR=SYSnnn.

serial number — From 1 to 6 characters indicating the volume serial number for this extent. If fewer than six characters are used, the field is right-justified and padded with zeros. If this operand is omitted, the volume serial number of the preceding EXTENT is used. If no serial number was provided in the EXTENT command, the serial number is not checked, and the files may be destroyed if the wrong volume is mounted.

type — One of the following character to indicate the extent type:

1 - data area (no split cylinder)

2 - overflow area (for indexed sequential file)

4 - index area (for indexed sequential file)

8 - data area (split cylinder)

If this operand is omitted, type 1 is assumed.

sequence number — One to three characters containing a decimal number from 0 to 255, indicating the sequence number of this extent within a multiextent file. Extent sequence 0 is used for the master index of an indexed sequential file. If a master index is not used, the first extent of an indexed sequential file has the sequence number 1. The extent sequence number for

all other types of files begins with 0. If this operand is omitted for the first extent of an ISFMS file, the extent is not accepted. This operand is not required for SD or DA files.

relative track — One to five characters indicating the sequential number of the track (relative to zero) where the data extent is to begin. For example, track 0, cylinder 150 on a 2311 equals 1500 in relative track. If this field is omitted on an ISFMS file, the extent is not accepted. This operand is not required for SD or DA input files because the extents from the file labels on a disk are used.

number of tracks — One to five characters indicating the number of tracks to be allotted to the file. For SD or DA input files, this operand may be omitted. For split cylinders, the number of tracks must be an even multiple of the number of tracks per cylinder specified for the file.

split cylinder track — One or two characters, from 0 to 19, indicating the upper track number for the split cylinder in SD files.

bins — One or two characters identifying the 2321 bin for which the extent was created or on which the extent is currently located. If this field is one character, the creating bin is assumed to be zero. There is no need to specify a creating bin number for SD or ISFMS files. If this operand is omitted, bin zero is assumed for both characters. If this operand is included and positional operands are omitted, only one comma is required preceding the key-word operand (bins). (One comma for each omitted positional operand is acceptable, but not necessary.)

HOLD -- Hold Foreground Unit Assignments Command

This command causes all I/O assignments for the foreground area(s) specified, operating in SPI mode, to stay in effect until released by RELSE command. If the assignments in a foreground area are held, they will be overridden by any new assignments made during subsequent SPI for that same area.

If DASD file protection has been specified as a supervisor generation option, the HOLD command may cause the JIB (Job Information Block) table to expand so must that it will be impossible to initiate jobs in the partitions involved. The DASD file protect function uses the JIB table to store information concerning the DASD extents (used by the OPEN macro) along with other information for the job. When the HOLD command is used, assignments and JIB information are held across jobs. When the JIB table is loaded with extent information, an attempt to initiate additional jobs in the partition results in the error message indicating that no more JIBs are available. It is possible to circumvent this situation by limiting or avoiding use of the HOLD command for DASD devices used by the foreground partitions when the DASD file protect option has been specified. The format of the HOLD command is:

Operation	Operand
HOLD	{F1[,F2]} {F2[,F1]}

LBLTYP -- Label Information Command

The LBLTYP command defines the amount of main storage to be reserved for processing tape and nonsequential disk file labels in the problem area of main storage. It should be submitted immediately before the EXEC command for the program. This command is required for SPI only when a self-relocating program is to use tape or nonsequential DASD label information from the standard label cylinder. The format of the LBLTYP command is:

Operation	Operand
LBLTYP	{TAPE[(nn)]} {NSD(nn)}

TAPE[(nn)] — used only if tape files, requiring label information, are to be processed, and no nonsequential DASD files are to be processed. The parameter (nn) is optional and is provided for future expansion.

NSD(nn) Used if any nonsequential DASD files are to be processed, regardless of other file types used. The parameter (nn) specifies the largest number of extents used for a single file.

The amount of storage that must be reserved for label information is:

1. For any number of tape labels: 80 bytes per label.

2. For sequential DASD and DTFPH MOUNTED=SINGLE: 0 bytes.

3. For DTFIS, DTFDA, and DTFPH MOUNTED=All: 84 bytes plus 20 bytes per extent.

The area reserved is that required by the file with the largest label requirements. This area is used during OPEN.

LISTIO -- List I/O Assignment Command

The LISTIO command is used to cause the system to print a listing of I/O assignments on the printer-keyboard (SYSLOG). Some of the operands in the following list can be issued only between job steps. Others can be issued only during SPI. A third group can be issued either between job steps or during SPI. The form of the list I/O command is:

Operation	Operand
LISTIO	BG DOWN PROG SYS SYSxxx UNITS X'cuu' ALL F1 F2 UA

Physical units are listed with current device specification for magnetic tape units. Logical units are listed with ownership (background, foreground-one, or foreground-two), where applicable. List I/O uses the logical transient area, and will prevent operator communication until this area is free.

The following operands are valid between job steps and during SPI.

ALL Lists the physical units assigned to all logical units.

F1 Lists the physical units assigned to all foreground-one logical units.

F2 Lists the physical units assigned to all foreground-two logical units.

UA Lists all physical units not currently assigned to a logical unit.

The following operand is valid only during SPI.

BG Lists the physical units assigned to all background system and programmer logical units.

The following operands are valid only between job steps.

DOWN Lists all physical units specified as inoperative.

PROG Lists the physical units assigned to all background programmer logical units.

SYS Lists the physical units assigned to all background system logical units.

SYSxxx Lists the physical units assigned to the specified logical unit. SYSOUT and SYSIN are not valid in this command.

UNITS Lists the logical units assigned to all physical units.

X'cuu' Lists the logical units assigned to the specified physical unit.

LOG -- Log Command

The LOG command is used to cause the system to log columns 1-72 of all Job Control statements and/or SPI commands on SYSLOG until a NOLOG command is sensed.

Operation	Operand
LOG	blank

The operand field is ignored by the system.

MAP -- Map Main Storage Command

The MAP command is used to cause the system to print on SYSLOG the areas of main storage allocated to programs in a multiprogramming environment. It indicates what programs are being executed, and which has access to the interval timer. The form of the MAP command is as follows.

Operation	Operand
MAP	blank

The map of main storage produced is in the following format.

Field 1	Field 2	Field 3	Field 4
SP		upper limit	
BG	size	upper limit	name
F2	size	upper limit	name
F1 T	size	upper limit	name

The fields indicate the following:

Field 1 (area identification)
- SP - Supervisor
- BG - Background area
- F2 - Foreground-two area
- F1 - Foreground-one area
- T - Indicates which program has interval timer support

Field 2 (size of area allocated)
The number of bytes allocated to the area in main storage. The size is printed in even multiples of 2K, where 2K is equal to 2048 bytes. For the background area, this represents the number of full 2K blocks. For example, if the area were actually 11.2K, the map would indicate 10K.

Field 3 (area upper limit of main storage)
The highest storage address allocated to the corresponding area is printed in decimal.

Field 4 (user name)
- BG - Background job name
- F2 - Foreground-two program name
- F1 - Foreground-one program name

When the name field is blank for F2 or F1 (SPI mode), no active program is being executed in the area. When there is no active program in a batched-job area, 'NO NAME' appears in this field.

MSG -- Transfer Control Command

The interrupt key allows the operator to communicate with the background partition. The MSG command gives the operator this same capability for foreground areas. The format of the MSG command is:

Operation	Operand
MSG	{F1 / F2}

F1,F2 Used to request a foreground-one program.

If the program in the specified area has not established any operator communication linkage, a message is printed on the printer-keyboard informing the operator of this condition.

MTC -- Magnetic Tape Command

The MTC command is used to initiate magnetic tape control operations. The first entry in the operand specifies the operation to be performed. The form of the MTC command is:

Operation	Operand
MTC	opcode, {SYSxxx[,nn] / X'cuu'}

The entry in the operand can be:

Op code	Meaning	Possible Use
BSF	BackSpace File	Backspace one file so tape is positioned for reading the tapemark preceding the file backspaced.
BSR	BackSpace Record	Backspace record.
ERG	ERase Gap	Erase gap
FSF	Forward Space File	Used when restarting a program. The tape is positioned beyond the tapemark following the file spaced over.
FSR	Forward Space Record	Locate a specific record within a file.
RUN	Rewind and UNload	Rewind and unload (from the console) a tape on a specific unit.
REW	REWind	Rewind (from the console) a tape on a specific unit.
WTM	Write Tape Mark	Write a tapemark on an output file.

The second entry, X'cuu', is expressed in hexadecimal form, where c is the channel number (0-6) and uu is the unit number, 00-FE (0-254 in hexadecimal). The alternate second entry, SYSxxx, represents any logical unit assigned to this device.

The optional third entry, nn, is a decimal number (01-99) that represents the number of times the specified operation is to be performed.

Although the IBM-supplied programs do not require the operator to perform magnetic tape operations, the MTC command may be very helpful to the user in performing magnetic tape operations from the 1052 printer-keyboard.

NOLOG -- Suppress Logging Command

The NOLOG command is used to cause the system to suppress the logging of all Job Control statements and/or SPI commands on the 1052 printer- keyboard until a LOG command is sensed. The Job Control statements, JOB, PAUSE, *, and /&, are always logged. Any control statement in error is also logged. The form of the NOLOG command is:

Operation	Operand
NOLOG	blank

The operand field is ignored by the system.

PAUSE -- Pause Command

The PAUSE command is used to cause Job Control processing to pause at the end of the current program job step, or at the end of the current job (EOJ operand). At that time, the printer-keyboard is unlocked for message input. The end-of-communications command Ⓑ causes processing to continue. The form of the PAUSE command is:

Operation	Operand
PAUSE	{ blank / BG / F1 / F2 } [,EOJ]

If blank, BG is assumed.

READ -- Specify Reader Command

The READ command is used to assign a card reader from which further SPI commands are read. The device specified must not be assigned to any other program. The form of the READ command is:

Operation	Operand
READ	X'cuu'

The entry X'cuu' is expressed in hexadecimal form, where c is the channel number (0-6) and uu is the unit number, 00-FE (0-254) in hexadecimal.

RELSE -- Release SPI Assignments Command

This command causes all specified I/O assignments for the foreground area(s), operating in SPI mode only, to be unassigned at the end of the current job active for that area. The form of the command is:

Operation	Operand
RELSE	{F1[,F2]} {F2[,F1]}

RESET -- Reset I/O Assignments Command

The RESET command is used to reset designated background I/O assignments to the system standard. The standard assignments are those specified when the system was generated and those permanent modifications made by the operator using the ASSGN command (without the TEMP option). The form of the RESET command is:

Operation	Operand
RESET	{SYS PROG ALL SYSxxx}

SYS Resets all system logical units to their standard assignments.

PROG Resets all programmer logical units to their standard assignments.

ALL Resets all logical units to their standard assignments.

SYSxxx Resets the logical unit specified to its standard assignment.

SET -- Set Value Command

The SET command is used to initialize the date, clock, and UPSI configuration. It is also used to specify the number of lines to be printed on SYSLST and the remaining disk capacity when either SYSLST or SYSPCH is assigned to a disk. The form of the SET command is as follows.

Operation	Operand
SET	[DATE=n1][,CLOCK=n2] [,UPSI=n3][,LINECT=n4] [,RCLST=n5][,RCPCH=n6]

The entries in the operand field represent the following.

DATE=n1 Must be specified at IPL time. (This operand is valid also during Job Control.) Sets the system date permanently to the specified value. n1 has one of the following formats.

mm/dd/yy
dd/mm/yy

mm specifies the month; dd specifies the day; yy specifies the year. The format used is selected when the system is generated.

CLOCK=n2 Must be specified at IPL time if the timer feature is present. (This operand is valid also during Job Control.) Sets the system clock to the specified value. n2 has the following format:

hh/mm/ss

hh specifies hours (00-23); mm specifies minutes (00-59); ss specifies seconds (00-59).

UPSI=n3 Never given at IPL time, but can be used at other times. Sets the bit configuration of the UPSI byte in the communication region. n3 consists of one to eight digits, either 0, 1, or X. Positions containing 0 are set to 0; positions containing 1 are set to 1; positions containing X are unchanged. Unspecified rightmost positions are assumed to be X.

LINECT=n4 Never given at IPL time, but can be used at other times. Sets the standard number of lines to be printed on each page of SYSLST. n4 is an integer between 30 and 99.

RCLST=n5 Never given at IPL time, but can be used at other times. n5 is a decimal number ($100 \le n5 \le 65535$) indicating the minimum number of records remaining to be written on SYSLST when assigned to disk before a warning is issued to the operator that the capacity of the

extent is near. If no value is given, the system sets RCLST equal to the value specified when the system was generated. If no value was specified, the system sets RCLST equal to 1000.

RCPCH=n6 Never given at IPL time, but can be used at other times. n6 is a decimal number (100≤n6≤65535) indicating the minimum number of records remaining to be written on SYSPCH when assigned to disk before a warning is issued to the operator that the capacity of the extent is near. If no value is given, the system sets RCPCH equal to the value specified when the system was generated. If no value was specified, the system sets RCPCH equal to 1000.

The SET command is also discussed in the section Starting the System (IPL Procedure).

START -- Start Single Program Initiation. Command

The START command can be used to initiate an SPI program. The form of the start command is:

Operation	Operand
START	{BG / F1 / F2}

BG Background processing is resumed. The operator must enter the next command. The START BG command is effective only if a STOP command was issued previously.

F1 or F2 Specifies an SPI program is to be initiated. The SPI routines are given control. Commands that may be issued following the START command are shown in Figure 3 and Appendix C. If the specified foreground area is either being used by a program or has no area allocated to it, a message is printed on the printer-keyboard informing the operator of this condition.

STOP -- Stop Batch Job Processing Command

The STOP command can be used in a multiprogramming environment to suspend batch job processing in any programming partition. STOP must be issued within the partition to be stopped. The form of the STOP command is:

Operation	Operand
STOP	blank

This command removes the batched partition from the system's task selection mechanism. If no other partitions are active, the system is placed in the wait state. Processing of batched jobs can be continued by using the BATCH or START command or cancelled by the CANCEL command.

Note that in a multiprogramming environment, it may be advisable to use a STOP command instead of a PAUSE command. The PAUSE command causes a read to be issued to SYSLOG, tying up the 1052 until the operator responds.

TIMER -- Interval Timer Command

The TIMER command causes interval timer support to be given to the program specified. The form of the TIMER command is:

Operation	Operand
TIMER	{BG / F1 / F2}

If interval timer support is already allocated to the program specified, the command is ignored. (This may result from a previously specified timer option specified when the system was generated, or a previous TIMER command.) If the interval timer was allocated to a different program and that program has an existing STXIT or SETIME linkage established, a message is printed on the printer-keyboard. A subsequent STXIT or SETIME instruction issued by the program previously having access to the timer causes the cancellation of that program. Once established, timer support remains with an area from program-to-program until changed by a TIMER command, or a new IPL procedure is performed.

TLBL -- Tape Label Information Command

The TLBL command replaces the VOL and TPLAB command combination used in earlier systems. This former combination (VOI and TPLAB) will continue to be recognized by the system. The TLBL command contains file label information for tape label checking and writing. The format of the TLBL command is:

Operation	Operand
TLBL	filename,['file-ID'],[date], [file-serial-number], [volume-sequence-number], [file-sequence-number], [generation-number], [version-number]

filename — From one to seven characters and identical to the symbolic name of the program DTF, which identifies the file.

'file-ID' — One to 17 characters, within apostrophes, indicating the name associated with the file on the volume. This operand may contain embedded blanks. If this operand is omitted (or included but left blank) for output files, the "filename" is used. If this operand is omitted on input files, no checking is done.

date — Four to six characters (in format yy/ddd), indicating the expiration date for output files or the creation date for input files. (The day of the year may have from 1 to 3 characters and must be less than 366.) For output files, a one to four character retention period (d through dddd) may be specified. If this operand is omitted, a 0-day retention period is assumed for output files, and the current date is used as the creation date. For input files, no checking is done if this operand is omitted or if a retention period is specified.

file serial number — One to six characters, indicating the volume serial number of the first (or only) reel of the file. If fewer than six characters are specified, the field is right-justified and padded with zeros. If this operand is omitted on output, the volume serial number of the first (or only) reel of the file is used. If omitted on input, no checking is done.

volume sequence number — One to four characters in ascending order for each volume of a multiple volume file. This number is incremented automatically by OPEN/CLOSE routines as required. If omitted on output, BCD 0001 is used. If omitted on input, no checking is done.

file sequence number — One to four characters in ascending order for each file of a multiple file volume. This number is automatically incremented by OPEN/CLOSE routine as required. If omitted on output, BCD 0001 is used. If omitted on input, no checking is done.

generation number — One to four characters which modify the file/ID. If omitted on output, BCD 0001 is used. If omitted on input, no checking is done.

version number — One or two characters which modify the generation number. If omitted on output, BCD 01 is used. If omitted on input, no checking is done.

Additional fields in the standard tape file label are filled with default options for output files and "DOS/TOS/360" is used as the system code.

TPLAB -- Tape Label Information Command

The tape-label information command contains file label information for tape label checking and writing. This command must immediately follow the volume (VOL) command. Any deviation from this sequence results in a statement out-of-sequence error message. The TPLAB command contains an image of a portion of the standard tape file label. The format and content of this label are presented in Appendix E (Figure 18). Label fields 3-10 are always included just as they appear in the label. These are the only fields used for label checking. The form of the TPLAB command is as follows.

Operation	Operand
TPIAB	{'label fields 3-10'} {'label fields 3-13'}

'label fields 3-10'
This is a 49-byte character string, included within apostrophes (8-5 punch), identical to positions 5-53 of the tape file label. These fields can be included in one line.

'label fields 3-13'
This is a 69-byte character string, included within apostrophes (8-5 punch), identical to positions 5-73 of the tape file label. These fields are too long to be included on a single line. The character string must extend into column 71, a continuation character (any character) is present in column 72, and the character string is completed on the next line. The continuation line starts in column 16.

UCS -- Load Universal Character Set Buffer Command

The UCS command causes the 240-character Universal Character Set contained in the core image library phase specified by "phasename" to be loaded as buffer storage in the IBM 2821 Control Unit. The 240 EBCDIC characters correspond to the 240 print positions on 1403 chains and trains. A character sent to the printer for printing is matched against the characters in the UCS buffer, and when a match occurs, the corresponding chain/train character is printed in the print line position that the output character occupied.

The logical unit must be assigned to a 1403 printer with the UCS feature. It is the user's responsibility to assemble, linkage-edit, and catalog his UCS buffer phases into the core image library, and to mount the new chain or train before the UCS command is executed. The format of the UCS command is:

Operation	Operand
UCS	SYSxxx,phasename[,FOLD] [,BLOCK][,NULMSG]

SYSxxx The name of the logical unit assigned to a 1403 UCS printer to be loaded.

phasename
The symbolic name of the core image library phase containing the 240 EBCDIC characters to be loaded followed by an 80-character verification message. Each phase may have any valid phasename.

FOLD Signifies that the buffer is to be loaded with the folding operation code in the CCW.

BLOCK Signifies that the 2821 latch is to be set to inhibit data checks generated by the 1403 UCS printer due to print line-character mismatches with the UCS buffer.

NULMSG Signifies that the 80-character verification message is not to be printed on the 1403 after the buffer is loaded. If this parameter is not specified, after the UCS buffer has been loaded, the program will skip to channel one, issue a print of the last 80 characters in the phase specified by the first parameter, and again skip to channel 1. This identifies the phase, if the phase name is incorporated in the verification message. If the user's chain/train is identified by a unique character, this message may also be used to verify that the mounted chain or train is compatible with the contents of the UCS buffer. This can be done by including the unique character in the verification message.

The UCS phase format consists of a 240-character UCS buffer load and an 80-character verification message. (For more information on the UCS command, consult the IBM 2821 Control Unit publication listed under Reference Publications in this manual.)

UNA--Unassign Command (Single Program Initiation)

This command causes all I/O assignments for the specified foreground area(s) to be unassigned. A previous hold for the area remains in effect; i.e., any future assignments initiated in that area will be held. Both UNA and RELSE commands must be used to immediately unassign an area and prevent an assignment from being held. The foreground area must be inactive. This command is intended to be used to free physical units currently assigned to a foreground area under the HOLD command. The format of the UNA command is as follows.

Operation	Operand
UNA	{F1[,F2]} {F2[,F1]}

UNBATCH -- Terminate Batch Job Processing

The UNBATCH command is accepted only from SYSLOG and is valid only for foreground partitions (operating in batch mode) when no job is in process for that partition. All tape/disk files must have been previously closed. When this command is issued, batch processing is terminated and the partition is released. (For specific information concerning the termination of batch job processing in a foreground partition, refer to the section Terminating Batch Processing in a Foreground Area.) Following the UNBATCH command, the attention routine will accept BATCH or START commands for the released partition. The format of the UNBATCH command is:

Operation	Operand
UNBATCH	blank

VOL -- Volume Information Command

The VOL (volume) command is used when specifying a set of label information for a magnetic tape file or a DASD file. A VOL command must be used for each file on a multifile volume. The form of the VOL command is:

Operation	Operand
VOL	SYSnnn,filename

SYSnnn Symbolic unit name.

filename File name. This can be one to seven characters and is identical to the symbolic address of the program DTF that identifies the file.

XTENT -- DASD Extent Information Command

The extent command defines each area, or extent, for a DASD file. One or more XTENT commands must follow each DLAB command. Any deviation from this sequence results in a statement out of sequence error message. The form of the XTENT command is:

Operation	Operand
XTENT	type,sequence,lower,upper, 'serial no.',SYSxxx[,B_2]

type Extent Type. 1 or 3 columns, containing:

1 = data area (no split cylinder)
2 = overflow area (for indexed sequential file)
4 = index area (for indexed sequential file)
128 = data area (split cylinder). If type 128 is specified, the lower head is assumed to be $H_1H_2H_2$ part of the operand lower, and the upper head is assumed to be $H_1H_2H_2$ part of the operand upper.

sequence Extent Sequence Number. 1-3 columns, containing a decimal number from 0 to 255, indicating the sequence number of this extent within a multi-extent file. Extent sequence 0 is used for the master index of an indexed sequential file. If the master index is not used, the first extent of an indexed sequential file has sequence number 1. The extent sequence for all other types of files begins with 0.

lower Lower Limit of Extent. Nine columns, containing the lowest address of the extent in the form $B_1C_1C_1C_2C_2C_2H_1H_2H_2$, where:

B_1 = initially assigned cell number.

0 for 2311,2314
0 to 9 for 2321

C_1C_1 = Subcell number.

00 for 2311,2314
00 to 19 for 2321

$C_2C_2C_2$ = cylinder number.

000 to 199 for 2311,2314
or

strip number:

000 to 009 for 2321

H_1 = head block position.

0 for 2311,2314
0 to 4 for 2321

H_2H_2 = head number.

00 to 09 for 2311
00 to 19 for 2314,2321

Although a part of the address (such as B_1 or $C_2C_2C_2$) can be zero, a lower extent of all zeros is invalid.

upper — Upper Limit of Extent. Nine columns containing the highest address of the extent, in the same form as the lower limit.

Note: The last four strips of subcell 19 are reserved for alternate tracks on the 2321 data cell.

'serial no.' — Volume Serial Number. This is a 6-byte alphameric character string, contained within apostrophes. The number is the same as in the volume label (volume serial number) and the Format 1 label (file serial number).

SYSxxx — This is the symbolic address of the DASD drive.

B_2 — Currently assigned cell number.

0 for 2311,2314
0-9 for 2321

This field is optional. If missing, B_2=B_1 is assumed.

STARTING THE SYSTEM (IPL PROCEDURE)

This section describes the IPL procedure used to start the system. Figures 6 and 7 provide a summary of this information.

The system pack must first be placed on a disk unit. The address of the disk unit is then selected from the load-unit switches on the console, and the load key is pressed. This causes IPL and the supervisor portion of the control program to be read into low main storage. When IPL and the supervisor portion of the control program have been read successfully, the wait state is entered (with all interruptions enabled). This part of the IPL procedure is the same whether a printer-keyboard or a card reader is used for operator communication.

When the wait state is entered, the operator communication device for IPL must be given to the system. If it is to be a 1052, the request key on the printer-keyboard is pressed. The message:

0I10A GIVE IPL CONTROL COMMANDS

is printed on the printer-keyboard.

Step	Procedure	Comments
1	Mount the system pack on a 2311 or 2314 disk drive. Ready this device.	
2	Place job control statements in SYSRDR. Ready this device.	
3	Dial the load-unit switches on the system control panel to the address (channel and unit) of the 2311 or 2314.	
4	Press LOAD.	IPL and the Supervisor are loaded into main storage. The system enters the wait state.
5	Press REQUEST.	This message prints: 0I10A GIVE IPL CONTROL STATEMENTS
6	If desired, enter ADD and DEL commands. Otherwise, omit this step.	Devices can be added to, or deleted from the PUB table.
7	Enter SET command.	The date is required. The time of day is required if the interval timer is present. No other SET command operands are acceptable. This message prints: 0I20I DOS IPL COMPLETE Control is given to the control program.

●Figure 6. IPL Procedure Using 1052 Printer-Keyboard

Step	Procedures	Comments
1	Mount the system pack on a 2311, 2314 disk drive. Ready this device.	
2	Place control statements in a card reader. Do not ready this device if it is to be assigned during this IPL.	These statements are: ADD (optional, but if used, DEL must be ahead of SET) SET (required) job control statements.
3	Dial the load-unit switches on the system control panel to the address (channel and unit) of the 2311,2314	
4	Press LOAD.	IPL and the supervisor are loaded into main storage. The system enters the wait state.
5	Press INTERRUPT, if the card reader is assigned to SYSRDR, or Press START on card reader if it is not yet assigned to SYSRDR.	Control statements are read. Control is then given to the control program. When the reader becomes ready, it is automatically assigned to SYSRDR. Control statements are read and message 0I20I DOS IPL COMPLETE is issued when IPL is complete and control is given to the control program.

● Figure 7. IPL Procedure Using a Card Reader for Control Statements

If a card reader is used to perform the IPL procedure, there are two alternatives.

1. If the card reader is not yet assigned to SYSRDR, the start key on the reader is pressed. (Feeding the first card automatically assigns the card reader to SYSRDR.) If the wrong device is readied, a low-core wait-state message will be given. No printed messages occur after the system enters the wait state. Instead, the first four characters of any message (0I10-0I21) are placed in bytes 0-3. For example, message 07Wcuu is given if the device type is not valid for IPL communication (refer to Appendix G). If the device accepts the command, message 0I11A is given.

2. If the card reader is already assigned to SYSRDR, press the interrupt key on the console. Control statements can now be read from the communication device.

The operator has the option of changing the PUB table (which indicates I/O device configuration) by adding or deleting devices. When a device is deleted (via the DEL command), all references to the device are removed. A device may be added (via the ADD command) only if sufficient space is already available in the PUB table. If a tape is to be added to the PUB table and tape-error statistics were specified during system generation, there must also be enough space for the associated tape-error block. If space is insufficient, an error message is issued. The ADD and DEL commands are described in Operator Command Formats.

The SET command must be entered at the operator communication device. The date is required and, if the timer is supported by the Supervisor, the time of day is also required. The SET command is described in Operator Command Formats. No other information is acceptable at this time. The SET command must follow any ADD or DEL commands. When the communication device is a 1052 printer-keyboard, the end-of-block character (Ⓑ) must be given immediately after the SET command. The message 0I20I DOS IPL COMPLETE, followed by 1I00A READY FOR COMMUNICATIONS, is printed on the printer-keyboard. Control statements can now be entered via the 1052 printer-keyboard. Ⓑ end-of-communications must be given to read control statements from SYSRDR, assigned to the background partition. Three situations are possible:

1. If a permanent assignment exists for SYSRDR and it is assigned to an operative device, control statements are read from this device.

2. If a permanent assignment exists for SYSRDR and it is assigned to an inoperative device, a message is printed on the printer-keyboard. The operator can then assign SYSRDR to the device containing the control statements for the first job.

3. If a permanent assignment does not exist for SYSRDR, a diagnostic message is printed on SYSLOG.

RUNNING BATCH JOBS

This section contains general information applicable to running batched jobs in one or in all three programming partitions. For specific details concerning the initiation or termination of batch processing in a foreground area, refer to the appropriate section of this manual.

Once the IPL procedure is complete, batch processing can be initiated in the

background (or foreground partition(s) if this option was selected at system generation time). If the operator is not certain that the necessary boundary alignment was established, either at system generation time or by a previous operator, he should issue the MAP command before initiating batch processing in any partition. The MAP command may be followed by any necessary ALLOC command(s) to establish the required boundaries for each partition.

All batch jobs for one or for all three partitions are submitted by the programmer as a complete package(s). The operator is concerned only with I/O assignments, removable volumes, and device setup. Each job must begin with a JOB statement and end with an end-of-job statement, /&. The system accepts the UNBATCH command only after job completion.

The operator may have to assign symbolic units to actual physical devices in all three programming partitions. A listing of all symbolic units that must be assigned to execute IBM-supplied programs is shown in Figure 8. In this illustration, it is assumed that each of these programs is in the core image library and that each program has been edited to run with the control program. The EXEC statement calls the program from the system pack into main storage for execution. A discussion of EXEC statements for each program follows.

For language translators:

// EXEC ASSEMBLY	Calls the Assembler program.
// EXEC COBOL	Calls the COBOL compiler.
// EXEC FORTRAN	Calls the FORTRAN compiler.
// EXEC PL/I	Calls the PL/I compiler
// EXEC RPG	Calls the RPG compiler.

For the Linkage Editor:

// EXEC LNKEDT	Calls the Linkage Editor program that edits all programs to run in the system.

For the Librarian:

// EXEC CSERV	Calls the service program that punches or writes on tape or disk user programs from the core image library during maintenance.
// EXEC MAINT	Calls the maintenance program that catalogs (adds) elements to the system libraries, deletes elements from the libraries, renames elements in the libraries, and condenses and reallocates the libraries.
// EXEC RSERV	Calls the service program that displays (prints) and/or punches the contents of the relocatable library.
// EXEC SSERV	Calls the service program that displays and/or punches the content of the source statement library.
// EXEC CORGZ	Calls the organization program that selectively or completely copies the resident system.
// EXEC DSERV	Calls the service program that displays the content of the directories.

For Sort/Merge:

// EXEC DSORT	Calls the Disk Sort/Merge program.
// EXEC TSRT	Calls the Tape Sort/Merge program.

For Autotest:

// EXEC ATLEDT	Calls the Autotest program.

For the Utilities:

// EXEC CRDD	Calls the copy disk-to-disk program.
// EXEC CRDT	Calls the copy disk-to-tape program.
// EXEC CRTD	Calls the restore tape-to-disk program.
// EXEC CRDC	Calls the copy disk-to-card program.
// EXEC CRCD	Calls the restore card-to-disk program.
// EXEC INTD	Calls the initialize disk program.
// EXEC ATAD	Calls the alternate track assign disk program.
// EXEC CDPP	Calls the card-to-printer/punch program.
// EXEC CDTP	Calls the card-to-tape program.
// EXEC CDDK	Calls the card-to-disk program.
// EXEC TPCD	Calls the tape-to-card program.
// EXEC TPTP	Calls the tape-to-tape program.
// EXEC TPPR	Calls the tape-to-printer program.
// EXEC TPDK	Calls the tape-to-disk program.
// EXEC TPDC	Calls the tape-to-data-cell

	program.
// EXEC TPCP	Calls the tape compare program.
// EXEC DKCD	Calls the disk-to-card program.
// EXEC DKDK	Calls the disk-to-disk program.
// EXEC DKPR	Calls the disk-to-printer program.
// EXEC DKTP	Calls the disk-to-tape program.
// EXEC DKDC	Calls the disk-to-data-cell program.
// EXEC DCDC	Calls the data-cell-to-data-cell program.
// EXEC DCPR	Calls the data-cell-to-printer program.
// EXEC DCTP	Calls the data-cell-to-tape program.
// EXEC DCDK	Calls the data-cell-to-disk program.
// EXEC CLDC	Calls the clear data cell program.
// EXEC CLRDSK	Calls the clear disk program.
// EXEC VOC72UT	Calls the vocabulary file utility program for the 7772 Audio Response Unit.
// EXEC LISTVTOC	Calls the VTOC display program.

Because batch processing operates in a stacked-job environment, processing proceeds from one job to the next until an end-of-file condition is sensed on SYSRDR (e.g., no more cards are in the control card reader). When this condition occurs, message 1C00A ATTN. cuu is issued. When the next job is loaded and ready to be processed, the operator enters Ⓑ through the 1052 to resume processing.

If the 1052 is inoperable, an end-of-file message 1C00A ATTN c uu is issued on the printer assigned to SYSLOG. This message is immediately followed by 0P08 INTERV REQ. To continue processing the operator must reload the reader and enter 01 (hexadecimal) in byte 4 of main storage and press the INTERRUPT key on the console (refer to Appendix G).

Symbolic Unit	Operand of EXEC Statement	Language Translators: ASSEMBLY	COBOL	PL/1	RPG	FORTRAN	Linkage Editor: LNKEDT	Autotest: ATLEDT
SYSIPT	Required: Function: Device Type:	Always Input for program Card reader or tape unit, or disk						
SYSLOG	Required: Function: Device Type:	Always Operator communication 1052 printer-keyboard					Always Operator messages 1052 printer-keyboard	
SYSLST	Required: Function: Device Type:	Always Programmer messages, listing, etc. Printer or tape unit, or disk						
SYSPCH	Required: Function: Device Type:	If DECK specified in OPTION statement [1] Punched output Card punch or tape unit, or disk					No	No
SYSRDR	Required: Function: Device Type:	Always Job control statement input Card reader or tape unit, or disk						
SYSLNK	Required: Function: Device Type:	If LINK or CATAL is specified in the OPTION statement Receive input for linkage editor Disk unit					Always Input Disk Unit	Always Output [5] Disk Unit
SYS001	Required: Function: Device Type:	Always Mixed workfile Disk or tape unit [2]	Always Workfile Disk or tape unit [3]		Always Mixed workfile Disk or tape unit [4]	Always [6] Workfile Disk or tape unit		
SYS002	Required: Function: Device Type:	Always Mixed workfile Disk or tape unit [2]	Always Workfile Disk or tape unit [3]		Always Mixed workfile Disk or tape unit [4]	No	No	No
SYS003	Required: Function: Device Type:	Always Mixed workfile Disk or tape unit [2]	Always Workfile Disk or tape unit [3]		Always Mixed workfile Disk or tape unit [4]	No	No	No
SYS004	Required: Function: Device Type:	No	Optional Debug packets Disk or tape Unit	No	No		No	No
SYS005	Required: Function: Device Type:	No					No	Optional Output Tape unit

1 SYSPCH is also required for the Assembler if SYM is specified in the OPTION statement.
2 Assembler has three variants -- one using tape workfiles only, a second using disk workfiles only, and a third using mixed workfiles. The background partition must be 14K or larger for mixed workfiles.
3 If disk is used, SYS001, SYS002, SYS003, must be disk; if tape is used, they must be tape.
4 For mixed workfiles, the background partition must be 12K or larger.
5 Autotest workfile
6 For autotest, used only by the autotest linkage editor.

● Figure 8. Symbolic Units Required for IBM-Supplied Programs (Part 1 of 6)

		Librarian					
Symbolic Unit	Operand of EXEC Statement	MAINT	RSERV	SSERV	CSERV	DSERV	CORGZ
SYSIPT	Required: Function: Device type:	When cataloging to the relocatable or source statement library Book or module input Card reader or tape unit, or disk	Yes	Yes	Yes	Yes	Yes
SYSLOG	Required: Function: Device type:	Always Operator Messages 1052 Printer-Keyboard					
SYSLST	Required: Function: Device type:	Always Programmer Messages and/or listings Printer or tape unit, or disk					
SYSPCH	Required: Function: Device type:	No	If punch function is specified Punched output. Card punch or tape unit, or disk.			No	No
SYSRDR	Required: Function: Device type:	Always Control statement input Card reader or tape unit, or disk					
SYS000	Required: Function: Device type:	No	No	No	No	No	No
SYS001	Required: Function: Device type:	No	No	No	No	No	No
SYS002	Required: Function: Device type:	No	No	No	No	No	Always Output Disk unit

• Figure 8. Symbolic Units Required for IBM-Supplied Programs (Part 2 of 6)

Symbolic Unit	Operand of EXEC Statement	Disk Sort/Merge DSORT	Tape Sort/Merge TSRT	7772 Vocabulary File Utility VOC72UT
SYSIPT	Required: Function: Device type:	Always Input for program Card reader, tape unit, or disk		Always Input for program Card reader or tape unit
SYSLOG	Required: Function: Device type:	Always Operator Messages 1052 Printer-Keyboard		Always Operator messages 1052 Printer-Keyboard
SYSLST	Required: Function: Device type:	Always Programmer Messages Printer, tape unit, or disk		Always Listings Printer or tape unit
SYSPCH		Not Used		Not Used
SYSRDR	Required: Function: Device type:	Always Job Control statement input Card reader, tape unit, or disk		Always Job Control statement input Card reader or tape unit
SYSLNK		Not Used		Not Used
SYS000	Required: Function: Device type:	Optional Input, work area, or output Disk unit	No	See Note 1
SYS001	Required: Function: Device type:	Only for tape output Input, work area, or output Disk or tape unit	Always Output Tape unit	
SYS002	Required: Function: Device type:	Only for tape input Input, work area, or output Disk or tape unit (AA)	Always Input (A) Tape unit (H)	
SYS003	Required: Function: Device type:	Optional Input, work area, or output Disk or tape unit (BB)	Always for sort, optional for merge Workfile for sort, input for merge (B) Tape unit	
SYS004	Required: Function: Device type:	Optional Input, work area, or output Disk or tape unit (CC)	Always for sort, optional for merge Workfile for sort, input for merge (C) Tape unit	See Note 2 Input Vocabulary Files Tape unit
SYS005	Required: Function: Device type:	Optional Input, work area, or output Disk or tape unit (DD)	Always for sort, optional for merge Workfile for sort, input for merge (D) Tape unit	See Note 1
SYS006	Required: Function: Device type:	Optional Input, work area, or output Disk or tape unit (EE)	Optional Workfile for sort, input for merge (E) Tape unit	
SYS007	Required: Function: Device type:	Optional Input, work area, or output Disk or tape unit (FF)	Optional Workfile for sort, input for merge (F) Tape unit	
SYS008	Required: Function: Device type:	Optional Input, work area, or output Disk or tape unit (GG)	Optional Workfile for sort, input for merge (G) Tape unit	
SYS009	Required: Function: Device type:	Optional Input, work area, or output Disk or tape unit (HH)	No	
SYS010	Required: Function: Device type:	Optional Input, work area, or output Disk or tape unit (II)	No	

Note: There are no mandatory assignments of symbolic units for DSORT with disk input/output units. Any logical unit SYSnnn may be assigned.

(A) Must be user's first input file, for merge
(B) Must be user's second input file, for merge
(C) Must be user's third input file, for merge
(D) Must be user's fourth input file, for merge
(E) Must be user's fifth input file, for merge
(F) Must be user's sixth input file, for merge
(G) Must be user's seventh input file, for merge

(H) If multi-file input with alternate drives is specified, the IOCS CLOSE routine will not switch to the alternate drive when encountering an end-of-file condition. The operator must mount the first volume of the next file on the same tape unit on which the last volume of the preceding file was mounted.

(AA) Must be user's first tape input file (FILE A)
(BB) Must be user's second tape input file (FILE B)
(CC) Must be user's third tape input file (FILE C)
(DD) Must be user's fourth tape input file (FILE D)
(EE) Must be user's fifth tape input file (FILE E)
(FF) Must be user's sixth tape input file (FILE F)
(GG) Must be user's seventh tape input file (FILE G)
(HH) Must be user's eighth tape input file (FILE H)
(II) Must be user's ninth tape input file (FILE I)

Notes.
1. SYSnnn is used as a utility workfile. SYSppp is used to record Operative Vocabulary File. SYSnnn and SYSppp are assigned unique extents in 2311 disk storage. SYSnnn is always required for Operative Vocabulary File updating. It is required for Operative Vocabulary File building only when tables are to be created. Building an Operative Vocabulary File made up of only a residuum does not require SYSnnn.

2. If the Input Vocabulary is in the form of punched cards, it can be added to the control card deck; the resulting deck is the system input file (which may be copied on a magnetic tape) to be read from SYSIPT. If the Input Vocabulary is in the form of a magnetic tape file, it must be read from SYS004 while the control statements must be read from SYSIPT.

● Figure 8. Symbolic Units Required for IBM-Supplied Programs (Part 3 of 6)

		Utilities							
		Alternate Track ASSGN	Card To Printer/Punch	Card To Tape	Card To Disk	Copy Disk To Card	Copy Disk To Disk	Copy Disk To Tape	Restore Card To Disk
Symbolic Unit	Operand of EXEC Statement	ATAD	CDPP	CDTP	CDDK	CRDC	CRDD	CRDT	CRCD
SYSIPT	Required: Function: Device Type:	Always Utility control statement input Card reader, tape unit, or disk							
SYSLOG	Required: Function: Device Type:	Always Operator Messages 1052 Printer-Keyboard							
SYSLST	Required: Function: Device Type:	Always Programmer Messages Printer, tape unit, or disk L							
SYSPCH		Not Used							
SYSRDR	Required: Function: Device Type:	Always Job Control statement input Card reader, tape unit, or disk							
SYSLNK		Not Used							
SYS000		Always	Not Used						
SYS001		Not Used							
SYS002		Not Used							
SYS003		Not Used							
SYS004	Required: Function: Device Type:	Not Used	Always Input for program Card reader			Copy volume always a disk			Always Card Reader
SYS005	Required: Function: Device Type:	Not Used	If printed output is specified Printed	Always Ⓐ Tape unit	Always Ⓑ Disk unit	No	No	Always Ⓐ Tape unit	No
SYS006	Required: Function: Device Type:	Not Used	If punched out-put is specified Card punch	No	No	Always Ⓐ Card punch	No	No	No
SYSnnn						Copy file only always a disk			Always a disk

Note: The DASD (direct access storage device) utility programs are not restricted to the use of SYS004, SYS005, and SYS006 for input or output. Any logical unit SYSnnn may be assigned.

Ⓐ Tape output and alternate tape output
Ⓑ Disk output and alternate disk output
Ⓒ Data cell output and alternate data cell output

● Figure 8. Symbolic Units Required for IBM-Supplied Programs (Part 4 of 6)

Symbolic Unit	Operand of EXEC Statement	Utilities: Restore Tape To Disk (CRTD)	Initialize Disk (INTD)	Tape To Card (TPCD)	Tape To Tape (TPTP)	Tape To Printer (TPPR)	Tape To Disk (TPDK)	Tape To Data Cell (TPDC)	Tape Compare (TPCP)
SYSIPT	Required: Function: Device Type:	Always Utility control statement input Card reader, tape unit, or disk							
SYSLOG	Required: Function: Device Type:	Always Operator Messages 1052 Printer-Keyboard							
SYSLST	Required: Function: Device Type:	Always Programmer Messages Printer, tape unit, or disk							
SYSPCH		Not Used							
SYSRDR	Required: Function: Device Type:	Always Job Control statement input Card reader, tape unit, or disk							
SYSLNK		Not Used							
SYS000		Not Used	Always	Not Used					
SYS001		Not Used							
SYS002		Not Used							
SYS003		Not Used							
SYS004	Required: Function: Device Type:	Always Ⓐ Tape unit	No	Always Tape input and alternate tape input Tape unit					Always Tape to be compared
SYS005	Required: Function: Device Type:	No	No	No	Always Ⓐ Tape unit	Always Printer	Always Ⓑ Disk unit	Always Ⓒ Data cell	Always Tape to be compared
SYS006	Required: Function: Device Type:	No	No	Always Card punch	No	No	No	No	No
SYSnnn		Always a disk							

Note: The DASD (direct access storage device) utility programs are not restricted to the use of SYS004, SYS005, and SYS006 for input or output. Any logical unit SYSnnn may be assigned.

Ⓐ Tape output and alternate tape output
Ⓑ Disk output and alternate disk output
Ⓒ Data cell output and alternate data cell output

● Figure 8. Symbolic Units Required for IBM-Supplied Programs (Part 5 of 6)

Symbolic Unit	Operand of EXEC Statement	Utilities											
		Disk to Card	Disk to Disk	Disk to Printer	Disk to Tape	Disk to Data Cell	Data Cell to Data Cell	Data Cell to Printer	Data Cell to Tape	Data Cell to Disk	Clear Data Cell	Clear Disk	VTOC Display
		DKCD	DKDK	DKPR	DKTP	DKDC	DCDC	DCPR	DCTP	DCDK	CLDC	CLRDSK	List VTOC
SYSIPT	Required: Function: Device Type:	Always Utility control statement input Card reader, tape unit, or disk											No
SYSLOG	Required: Function: Device Type:	Always Operator messages 1052 printer-keyboard											
SYSLST	Required: Function: Device Type:	Always Programmer messages Printer, tape unit, or disk											No
SYSPCH		Not used											
SYSRDR	Required: Function: Device Type:	Always Job control statement input Card reader, tape unit, or disk											
SYSLNK		Not required											
SYS000		Not required											
SYS001		Not required											
SYS002		Not required											
SYS003		Not required											
SYS004		Not required											Always Input disk
SYS005	Required: Function: Device Type:	No	No	Always Printer	Always Ⓐ Tape unit	No	No	Always Printer	Always Ⓐ Tape unit	No	No	No	Always Output P-T-D
SYS006	Required: Function: Device Type:	Always Card output Card punch	No	No	No	No	No	No	No	No	No	No	No

Note: The DASD (direct access storage device) utility programs are not restricted to the use of SYS004, SYS005, and SYS006 for input or output. Any logical unit SYSnnn may be assigned.

Ⓐ Tape output and alternate tape output
Ⓑ Disk output and alternate disk output
Ⓒ Data cell output and alternate data cell output

● Figure 8. Symbolic Units Required for IBM-Supplied Programs (Part 6 of 6)

EXAMPLE OF A JOB

Figure 9 is an example of the job-control statement input required to perform a background batch processing job where SYSRDR is not the same device as SYSIPT. The job illustrates a series of six job steps that includes: a FORTRAN compilation, an assembly, the execution of the combined linkage-edited output, and the execution of a program that uses subroutines kept in the relocatable library.

Each of the following items is immediately preceded by a number that corresponds to the number at the left of the job-control statements in Figure 9.

1. JOB statement for the series of job steps to be performed.

2. ASSGN statements required for the job steps. (It is assumed that these assignments differ from those currently specified in the PUB table.) The new assignments will be carried through for the entire job, and will be reset at the end of the job to the standards established during system generation and/or to any permanent modifications made by the operator.

3. OPTION statement specifying that the output of the FORTRAN compilation and Assembler assembly is to be written on SYSLNK for subsequent linkage editing and that the dump option is to be exercised for an abnormal end of job.

4. EXEC statement for a FORTRAN compilation. This statement must be followed by the FORTRAN source deck and the end-of-data-file indicator (/*) when SYSIPT is the same device as SYSRDR.

5. EXEC statement for an assembly. This statement must be followed by the source deck and the end-of-data-file indicator when SYSIPT is the same as SYSRDR.

6. EXEC statement for the Linkage Editor. The Linkage Editor edits the combined FORTRAN and Assembler object programs on SYSLNK and writes the edited program temporarily in the core image library.

7. EXEC statement for the linkage-edited object program in the temporary core image library. The input data for the program execution (with end-of-data-file indicator) must follow this statement when SYSIPT is the same device as SYSRDR.

8. PAUSE statement that requests special operator action. Operator commands might also be issued at this time.

9. OPTION statement specifying that the no-dump option be exercised. The link option is included to enable a new linkage edit.

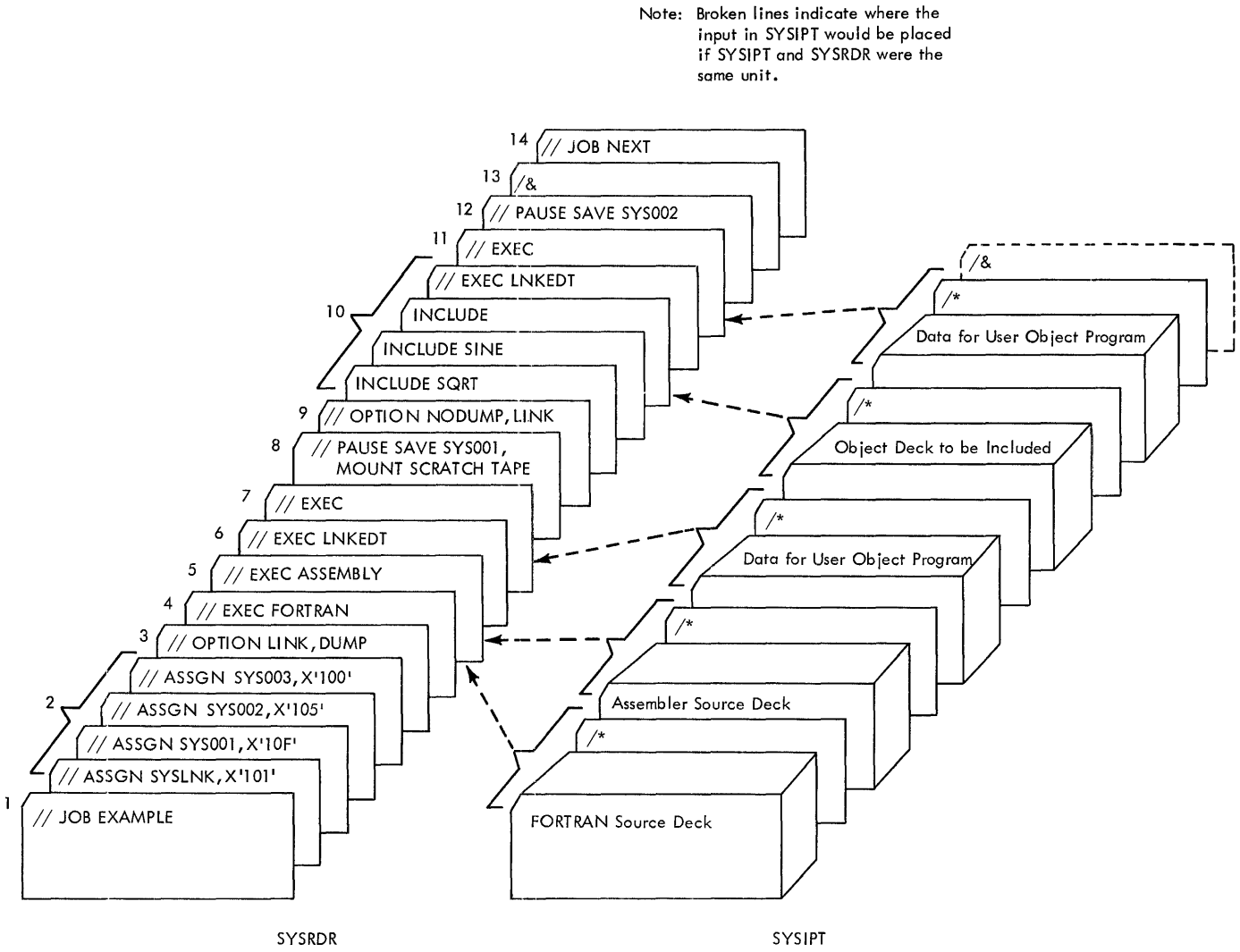
10. INCLUDE statements for modules in the relocatable library that are to be included with the object deck on SYSIPT. (The INCLUDE statement with a blank operand indicates that the program to be included follows on SYSIPT.) EXEC causes the resulting program to be edited and written in the core image library.

11. EXEC statement for the program to be executed. (The blank operand indicates that the program is in the core image library.) The data for the execution (with end-of-data-file indicator) must follow when SYSIPT is the same device as SYSRDR.

12. PAUSE statement requests operator action. Operator commands might also be issued at this time.

13. End-of-job indicator. All temporary symbolic unit assignments are reset to the standards established when the system was generated (plus any permanent modifications made by the operator). When SYSIPT is a device other than SYSRDR, a /& statement is required to indicate end-of-job in SYSIPT.

14. JOB statement for the next job.



● Figure 9. Example of a Job Control Statement Input (Background Only)

INITIATING BATCH PROCESSING IN A FOREGROUND AREA

Before batch processing can be initiated in one or both foreground areas, the following conditions must exist:

1. The storage capacity for the machine must be sufficient to support the foreground area(s). (Refer to Figure 1.)
2. The foreground batch processing option must have been specified when the system was generated.
3. Each foreground area, when operating in a batched-job foreground mode, must have a minimum of 10K.
4. The required separate input/output devices for the foreground areas must be available.
5. No job in the batch job stream may require the use of SYSLNK or the maintenance function of the Librarian.
6. The batch job input package must be on the appropriate input device.

If these conditions are satisfied, the operator can initiate a batch job stream in a foreground area by entering the BATCH command with the appropriate operand. The BATCH command may be entered through SYSLOG.

TERMINATING BATCH PROCESSING IN A FOREGROUND AREA

Once batch processing has begun in a foreground area, Job Control processes the job stream in the same manner as it does in the background. When the last job in the input reaches an end-of-job condition, the operator is notified of this condition by a message on SYSLOG. If there are no other batched jobs to be processed in this area, the operator may free the partition by issuing the UNBATCH command, so that SPI jobs can be run in the same area.

Because the UNBATCH command does not have an operand, it is important that Job Control be in control for the partition to be terminated at the time the UNBATCH command is issued. If a PAUSE command for the partition to be terminated was the last card read by Job Control, then UNBATCH can immediately be entered through the 1052 printer-keyboard to free the partition (refer to UNBATCH command). UNBATCH cannot be entered through any other device. If Job Control for the partition to be released is not active when the operator wishes to free the partition, he must press the request key on the 1052 and enter a PAUSE command (with the EOJ operand) for the appropriate partition. The operator can then enter the UNBATCH command when the partition is free.

REGAINING OPERATOR CONTROL FROM JOB CONTROL

During system operation, exceptional cases may arise where it is desirable for the operator to regain control from Job Control. In some cases, what appears to be a logical reply to a Job Control message may result in the same (or different) message being issued after each operator response. The result is an operator-system loop from which the operator must regain control if processing is to continue. Two general situations may indicate to the operator that this unique action is desirable.

1. When attempting to process Job Control statements, a record (for example, a data record) may be read that cannot be recognized by Job Control.

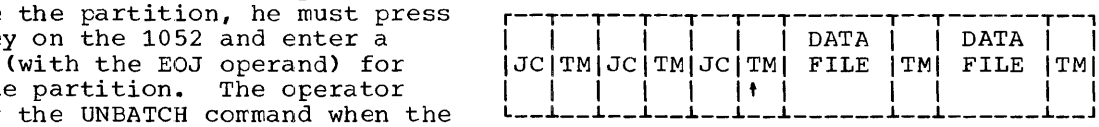
2. When attempting to process Job Control statements, a statement (or data record) cannot be read by the system device, resulting in an error recovery procedure.

The two typical examples that follow illustrate each of these cases in which the operator should perform special action to regain control.

For the first case, assume that SYSRDR (or SYSIPT) is assigned to a tape unit. A tape reel with several files (separated by tapemarks) is mounted on this device. A tapemark has just been sensed after reading the last record (job control statement) in one of the files. The system issued the message:

```
1C00A ATTN. c uu
```

to inform the operator of this condition. The operator decides to continue processing with the next file because he thinks the following file consists of a new job preceded by the necessary job control statements. He therefore replies IGNORE to the preceding message to tell the system that it will find the next job stream following the tapemark. The system, therefore, expects to find job control statements next. Suppose, instead, that the following file is a data file as illustrated.



The first record following the tapemark (arrow) is read by Job Control and analyzed for correct format. Because this record is not a job control statement (a data record), the system prints out the contents of the record just read on SYSLOG and issues the following message:

```
1S0nD INVALID STATEMENT
```

The operator's next decision determines what action the system will take. The operator looks at the record text printed out ahead of the last message and decides that it is not a job control statement that he can fix. He therefore enters a reply CANCEL and expects the system to scan and bypass the remaining records until the next /& statement is read, and to resume processing with the following job. However, immediately after entering the CANCEL reply, the system again issues the message:

```
1S0nD INVALID STATEMENT
```

This result could have been avoided if the operator had carefully examined the record printed out before message 1S0nD to determine the possibility of a user data file. If the record was a user data file, the operator should not have replied CANCEL or IGNORE to message 1S0nD, because either

reply causes the system to read the following record(s) searching for a /&.

When the operator realized that the record printed before message 1S0nD was part of a user data file, he should have mounted a new tape containing job control statements for other jobs to be executed and reassigned the same or a different unit. Note that this action is identical to the action the operator should have taken in response to the very first message (1C00A).

The next example shows the same situation occuring for less obvious reasons than in the last example. In this case, assume that everything is the same as before, except that the record following the tapemark (arrow in preceding illustration) cannot be read by the device. Perhaps the mounted reel was previously used as a scratch tape on a 7-track drive. The first few files on this reel consist of 9-track records. The reel is mounted on a 9-track drive and the tapemark following the last file (written in 9-track) is sensed. The system issues the message:

1C00A ATTN. c uu

as before. The operator again decides to reply IGNORE to this message. But this time the system responds with the message:

0P11 DATA CHK

Because the record just read was a 7-track data record, the system automatically enters an error recovery procedure for the device. After trying unsuccessfully to read the record 100 times, the system issues the preceding message. Because the operator does not know why this message was issued (he cannot know the record is 7-track) he decides to reply IGNORE. Job Control analyzes the record and finds that it is not valid and issues the message:

1S0nD INVALID STATEMENT

as in the first example. The operator now faces the same decision as in the first example, and his action determines if he and the system enter another loop. If the operator replies CANCEL to message 0P11, the results are the same. In this case, the operator should mount a new reel and reassign the unit after message 1S0nD is issued.

The same conditions and procedures apply if true Job Control statements, in the proper mode (9-track in this case), cannot be read due to some sort of physical error such as a dirty or crumpled tape.

RESTARTING A JOB FROM A CHECKPOINT

When a job is canceled before the normal end-of-job, it can be restarted immediately or at some later time. If checkpoints are not taken as part of the job, the job must be re-executed from the beginning as a new job.

If the programmer has included checkpoints in his job, the message,

0C00I CHKPT nnnn HAS BEEN TAKEN

is given each time a checkpoint is taken.

Checkpoint/restart capabilities are provided for background and foreground programs operating in a batched mode, within the following limitations:

1. The checkpoint job must be restarted in the same partition in which the checkpoint was taken.

2. Checkpoint records written by previous versions of the system cannot be restarted in the current system.

3. It is possible to increase the size of the partition between the time the checkpoint is taken and the time the program is restarted, provided the starting address of the partition remains unchanged.

4. The checkpoint can be recorded on a tape or 2311/2314 disk unit.

Most programs can be restarted after a checkpoint by using the following procedure. Some IBM-supplied programs (e.g. Disk Sort Merge) use other procedures for restarting from a checkpoint. For these cases, the appropriate program specifications manual should be consulted for the correct restarting procedure.

1. Replace the // EXEC statement with a // RSTRT statement (See Appendix A: Job Control Statements) using the information in the last 0C001 message received. The programmer should have specified the checkpoint unit when the job was submitted. There is no need to linkage edit the program again. When labeled multi-file tape reels are concerned, the volume sequence number must be changed to reflect the volumes for restarting if they are other than specified for volume number 1. Otherwise, a header check error will occur when trying to open subsequent volumes for the files. All other Job Control statements should be the same as when the job was originally run. If

necessary, the channel and unit addresses for the // ASSGN statement may be changed.

2. Rewind all tapes used by the program being restarted and mount them on devices assigned to the symbolic units required by the program.

3. Execute the job.

Note: If the Job Control statements were read from a tape or disk, the operator might not be able to restart the job conveniently. In this case, the job should be returned to the programmer.

SYSTEM OPERATION WITHOUT A 1052

Certain requirements must be met when a 1052 printer-keyboard is not available on the system:

1. A printer must be assigned to SYSLOG. Messages to the operator are printed on SYSLOG, after which an assumed operator response, where applicable, is taken. In most cases, the assumed response results in the termination of the job.

2. A printer must be assigned to SYSLST. If the same printer is assigned to both SYSLOG and SYSLST, system-to-operator messages may be embedded within user output.

3. A card reader must be assigned to SYSRDR and SYSIPT. This may be the same card reader or two different ones.

4. A card punch must be assigned to SYSPCH.

5. There are no multiprogramming capabilities without the 1052 printer-keyboard.

When a 1052 printer-keyboard is not available, total throughput in the individual installation may suffer because jobs containing errors (such as incorrect job steps, I/O assignments) will be canceled. In many instances, such errors could be corrected by the operator, using the 1052 printer-keyboard. The operator cannot communicate with the system except to respond to certain I/O error messages. (All error messages are described in the section System-to-Operator Messages.) The message is printed on the printer assigned to SYSLOG, and the system enters the wait state. The operator must then store a response in byte 4 of main storage and press the interrupt key.

The printed message also appears in bytes 0-3. The contents of main storage bytes 0-3 are described in Appendix H. If a response is required by the operator, it is always entered in byte 4 of main storage.

LINKAGE EDITING FOREGROUND PROGRAMS

Programs must be linkage edited to run at the starting boundary for the partition. (Refer to ALLOC command.) A save area is always automatically reserved at the beginning of either foreground partition by the linkage editor. This area contains the program name, return PSW, and all machine registers. Also, if labels are specified (// LBLTYP card) a label area is reserved immediately following the save area. The remaining core in the partition is available for the user's program.

An example of linkage editing a program to run in the F2 area (assume F1=16K,F2=16K in a 64K machine) follows:

```
// JOB name
// OPTION CATAL
   PHASE phasename,F+32K
```

In the preceding example, the F in the phase card signifies to the linkage editor that a foreground area is being used.

SINGLE PROGRAM INITIATION IN A FOREGROUND AREA

Single programs are initiated in a foreground area by the operator from the printer-keyboard assigned to SYSLOG. The operator may initiate an SPI program whenever an allocated foreground area does not contain a program, or has been released by an UNBATCH command after processing batched jobs in the area.

The operator initiates an SPI program by pressing the request key on the printer-keyboard. Control is given to the ATTN routine, which reads commands from the operator via the printer-keyboard.

Since the ATTN routine is called into the transient area, the request will be posted if a previous routine occupies the transient area. The START command indicates that an SPI program is to be initiated. The ATTN routine determines if the area specified in the START command is allocated and does not contain a program. If so, it transfers control to the SPI routine; otherwise, the operator is

notified that he has given an invalid command.

The SPI routine reads subsequent commands required to initiate the program. These commands are used primarily to specify I/O assignments and label information. When an I/O assignment is attempted, the following verification is made.

1. The symbolic unit is a programmer logical unit SYS000-SYSmax and system logical units SYSRDR, SYSIPT, SYSIN, SYSPCH, SYSLST, SYSOUT.

2. The programmer logical unit is contained within the number specified for the area when the system was generated (SYS000 - SYSmax).

3. If the symbolic unit is to be assigned to a non-DASD, the device is neither in use by the other foreground program (if applicable), nor is it assigned tc a background job either as a standard, temporary, or alternate unit.

When the EXEC command is encountered, the SPI routine directs the Supervisor to load the program to be executed into the designated foreground area. If the program has not been cataloged to the core image library, a diagnostic message will be issued on SYSLOG. If the program cannot be loaded, diagnostic messages are issued on SYSLOG for the specified foreground area.

SINGLE PROGRAM INITIATION EXAMPLES

The following examples of SPI are presented for several system configurations. One of these examples shows how SPI can be accomplished by using the 1052 terminal alone. Another example illustrates the same procedure when at least two card readers are available. Finally, three examples are included for installations with a single card reader.

Example 1

This procedure should be followed to initiate an SPI program at IPL time when one card reader is available and assigned to SYSIN.

1. Place the Job Control cards for the foreground program in the card reader, followed by any batch job cards.

2. Ready the reader.

3. Perform the IPL procedure with a 1052 as described under Starting the System (IPL Procedure).

4. Type:

```
ASSGN SYSIN,UA (B)
STOP (B)
```

5. Press the request key and wait for the message:

```
AR 1I60A READY FOR COMMUNICATIONS
```

6. Type:

```
START {F1} (B)
      {F2}
READ X'cuu' (B)
```

7. Wait for the foreground program to begin processing. This will occur as soon as the EXEC control statement is processed.

8. Press the request key and enter commands:

```
START BG (B)
ASSGN SYSIN,X'cuu' (B)
(B)
```

Example 2

This is an example of a planned procedure for initiating a foreground job at some time other than IPL time. One card reader is assumed to be assigned to SYSIN. If during the normal processing of background jobs, a // PAUSE statement instructs you to initiate a foreground program, the following procedure should be followed. Unless the message states otherwise, you may assume that the necessary foreground control cards are in the input job stream immediately following the // PAUSE statement.

1. Enter the following commands using the 1052 printer-keyboard.

```
ASSGN SYSIN,UA (B)
STOP (B)
```

2. Press the request key and wait for the message:

```
AR 1C60A READY FOR COMMUNICATIONS
```

3. Type:

```
START {F1} (B)
      {F2}
READ X'cuu' (B)
```

4. Wait for the foreground program to begin processing. This will occur as soon as the EXEC command is processed.

5. Press the request key and enter commands:

```
START BG (B)
ASSGN SYSIN,X'cuu' (B)
(B)
```

Example 3

This example is similar to Example 2.

- Either, you are verbally instructed to initiate a foreground job at the earliest opportunity;
- Or, an active program in either a background or foreground area issues a request to start a foreground program.

As in the case in Example 2, one card reader is assumed to be assigned to SYSIN.

1. Press the request key on the 1052 printer-keyboard and enter the following commands:

```
PAUSE (B)
(B)
```

2. WAIT for the message:

```
BG 1I60A READY FOR COMMUNICATIONS
```

   This message will appear at the completion of the current job step.

3. Run out the cards in the reader and separate the ones that have been processed from those that have not been processed.

4. Place foreground control cards in the reader, followed by the batch job cards that have not been processed.

5. Perform the steps shown in Example 2.

Example 4

This example is similar to Example 3. However, the system has two or more card readers.

1. Press the request key on the 1052 printer-keyboard and enter:

```
START {F1} (B)
      {F2}
```

2. Type:

```
LISTIO UA (B)
```

3. Determine which of the card readers is unassigned, and place the foreground control cards in that reader.

4. Type:

```
READ X'cuu' (B)
```

Example 5

This example is for systems that do not have any card readers. All initiation is accomplished by using the 1052 printer-keyboard. If there are a great number of commands necessary, such as several DLBL and EXTENT statements for multiple-file processing, this method of initiation can be very time consuming. The system throughput may be greatly affected, because system processing can be continued only while the logical transient area is not being used by an active program. From the standpoint of system throughput, foreground initiation using two or more card readers is the most efficient method. Somewhat less desirable is initiation using a single card reader or a 1052 printer-keyboard.

1. Press the request key on the 1052 printer-keyboard and enter the following commands:

```
START {F1} (B)
      {F2}
```

2. Type in programmer request control statements.

SINGLE PROGRAM TERMINATION

An SPI program is terminated under its own control by issuing an EOJ, DUMP, or CANCEL macro instruction, or through operator action, program error, or certain input/output failures. When an SPI program is terminated, the following action is taken:

1. All I/O operations that the program has requested are completed. If telecommunication device I/O requests are outstanding, they are terminated by the Halt I/O.

2. Tape error statistics (if specified when the system was generated) are typed on the printer-keyboard for tapes used by the program.

3. DASD extents in use by the program for purposes of DASD file protection are dequeued. (DASD file protection is an option that may be selected when the system is generated.)

4. The operator is notified that the program is completed and of the cause of termination, if abnormal. The main storage used by the program remains allocated for the appropriate foreground program area.

5. The program is detached from the system's task selection mechanism.

6. All I/O assignments are reset unless a previous HOLD command was issued for the area(s) terminated.

Following the completion of an SPI program, the operator may initiate another program for the specific area.

Foreground programs operating in batch mode, terminate in the same manner as background jobs.

PRINTING MAIN STORAGE AT EOJ FOR BATCHED JOBS

The control program can provide an automatic printout of main storage when an abnormal end-of-job situation occurs. The dump routine outputs (on the device assigned to SYSLST) the contents of the general registers and main storage from location 0 to the end of the problem program area. SYSLST must be a printer. Because the dump routine is transient, the previous contents of the transient area of storage are destroyed. To obtain an automatic storage printout, the option DUMP must have been specified during system generation or in a previously encountered OPTION statement. In a multiprogramming environment, only the problem program area that caused the dump will be printed.

In certain cases, it is possible for the operator to cancel an abnormal dump prior to its completion. For example, if the operator neglects to make a necessary assignment and starts a job, the job will be automatically canceled and message 0P71I will be issued. If a dump is taken, the operator can regain control prior to its completion by pressing the request key on the 1052 printer-keyboard twice. Message 1I40D, EMERGENCY CANCEL, will then be issued. The operator can reply CANCEL {BG, F1, F2} to this message.

AUTOTEST DISASTER CONTINUE ROUTINE (OPERATING PROCEDURE)

Autotest is used to alter a user program and test its effectiveness by means of test requests and end-of-job storage printouts (dumps). The output of these test requests, as well as the storage dump, must be obtained if the user program does not reach its normal end of job. The procedure to accomplish this, used when other methods fail, is called disaster continue.

The machine operator should attempt to intervene manually if the user program enters an unending loop, or destroys part of the Supervisor or Autotest control program. This is done by the cancel command.

If the supervisor can accept the cancel command, Autotest functions as during an abnormal end of job. In most cases, this procedure assures that all Autotest output (up to the time of intervention) is processed. This output, along with an abnormal end-of-job dump, is put out on the unit assigned to SYSLST.

If this method is unsuccessful (program remains in loop, or supervisor is unable to cancel), the disaster continue procedure must be used to obtain the Autotest output. The purpose of the disaster continue procedure is to get a storage dump, process any Autotest output (on SYSLNK, the Autotest work file) with the normal Autotest routines, and return control to Job Control.

Disaster Continue Routine

The machine operator removes the processed cards from the input stream and:

1. Dumps main storage with a stand alone utility program. (This saves the machine condition at the time of intervention for the programmer.)

2. Performs the standard IPL procedure to restore the Supervisor.

3. Ensures that all Autotest I/O unit assignments are the same as at the time of the intervention. This is done by inserting the ASSGN cards for the user program into the job stream. (See step 4.)

   Note: If the user program utilized the same set of physical unit assignments as the installation IPL set, this would not be necessary.

4. Inserts the following cards into the input stream, followed by all cards that have not been read:

   a. A JOB control card for the user program.

   b. ASSGN cards for the user program, if needed.

   c. A disaster continue control card. The format of this card is

      // EXEC ATLECONT

      Note: If the OPTION STDLABEL was not utilized, the VOL, DLAB, and EXTENT cards for the Autotest work file must be inserted after the JOB control card (step 4a).

5. Places the remainder of cards (from the point of intervention) in the input stream.

At the conclusion of the Autotest post user execution routines, control returns to the Supervisor and normal job processing resumes with the next job.

This section lists all system-to-operator messages that may appear on SYSLOG. When SYSLOG is an IBM 1052 Printer-keyboard, all messages, except those that are informational, require operator response. The WAIT state is entered after issuing messages that require operator action. If an error is made in typing a response to a job control message, the operator should type © (alter code 0) and then the correct response.

The operator responds to messages by typing one of the following commands on the 1052 printer-keyboard: BYPASS, DELETE, DSPLYV, CANCEI, CANCELV, EOF, EOV, IGNORE, NEWTAP, NEWPAC, and RETRY, or by typing in a corrected statement. These responses, issued on the printer-keyboard, may be typed in either upper or lower case letters.

When SYSLOG is a printer (because the 1052 is inoperable), the operator can reply to messages numbered 0P08A through 0P60 by storing a reply in main storage byte 4. If the 1052 is inoperable, the default entry for messages shows the action (if any) taken by the system when SYSLOG is assigned to a printer.

Each librarian message (message code 3) is preceded by the last control statement read.

If any data checks occur on a magnetic tape unit during the execution of a job (and if TEB=YES was specified during system generation), tape error statistics are printed on SYSLOG following the end-of-job statement. These statistics are printed for foreground and background areas and have the following form.

```
1I80I MAGNETIC TAPE ERRORS

CH.  UNIT PRE RDE WTE ERG NRC

 c    uu nnn nnn nnn nnn nnn

PRE= Permanent Redundant Read

RDE= Read Error Entry

WTE= Write Error Entry

ERG= Erase Gaps (record erased after
     write errors)

NRC= Noise Record Count.
```

To cancel a job, the operator usually should enter the command CANCEL. The message prefix determines which area will be canceled (e.g., background, foreground-one, or foreground-two). If a message is issued with the prefix AR (ATTN Routine), the cancel command must specify the area to be canceled [BG, F1, or F2].

When a batch job is canceled after sensing a preceding // JOB card, the system ignores all subsequent records (if any) for the job being terminated, and resumes processing with the control statement following the next /& (end-of-job) statement. In all other cases, the next record is read, and processing continues. (Refer to CANCEL command under Operator Command Formats.)

0C00I CHKPT NO. xxxx WAS TAKEN ON SYSxxx=cuu

Cause: Indicated checkpoint is complete.

0C01I CHKPT FROM IMPROPER ENVIRONMENT-CHKPT IGNORED

Cause: An SPI job in foreground area is attempting a checkpoint.

0C02I CHKPT UNIT SYSxxx NOT A TAPE-CHKPT IGNORED

Cause: The checkpoint specified a tape, but SYSxxx is not a tape.

0C03I I/O REQUEST PENDING ON THE TELE-PROCESSING DEVICE-CHKPT IGNORED

Cause: A teleprocessing program, running as a batch job, has an I/O request pending on a T/P device. The checkpoint routine cannot wait for the teleprocessing I/O to complete.

0C04I END ADDRESS PARAMETER GT END PROBLEM PROGRAM AREA-CHKPT IGNORED

Cause: The end address parameter, specified by the user in the CHKPT macro, has a value greater than the allotted problem program area.

0C05I CHKPT DTFPH FILE NOT OPEN-CHKPT IGNORED

Cause: The user did not open the DTFPH file defined for the disk unit specified in the checkpoint macro.

0C06I DTFPH FILE DEFINED MOUNTED=ALL-CHKPT IGNORED

Cause: The user did not specify MOUNTED=SINGLE as a parameter in the DTFPH macro for the disk unit specified in the checkpoint macro.

0C07I DTFPH FILE NOT DEFINED FOR OUTPUT CHKPT IGNORED

Cause: The user did not specify TYPEFLE=OUTPUT as a parameter in the DTFPH macro for the disk unit specified in the checkpoint macro.

0C08I CHKPT UNIT SYSxxx NOT A DISK-CHKPT IGNORED

Cause: The checkpoint specified a disk, but SYSxxx is not a disk.

0C09I INSUFFICIENT SPACE ON CHKPT FILE, CHECKPOINT IGNORED filename SYSxxx=cuu

Cause: Insufficient space alloted on disk to complete checkpoint, or

End of tape reached before checkpoint is complete.

Messages 0I00 and 0I01 are not printed on the 1052 but always appear in bytes 0-3 of main storage. If the IPL device is a card reader and an IPL error (0I11-0I24) occurs, the operator must display the message number in main storage bytes 0-3 (refer to Appendix H, Figure 20). The action for some of these messages states that the operator must restart the IPL procedure. This is only true if the IPL device is SYSRDR. If the IPL device is a 1052 printer-keyboard, the operator replies as instructed in the following messages.

0I00A None. 0I00 is stored in bytes 0-3 of main storage.

Cause: A Supervisor greater than 6K bytes was used in a machine with only 16K bytes of storage. (A minimum of 24K is required.)

Action: Perform the IPL procedure using a Supervisor that does not exceed 6K bytes of main storage.

Default: None.

0I01A None. 0I01 is stored in bytes 0-3 of main storage.

Cause: Occurs during the IPL procedure when the operator presses the external interrupt key, and no assignment exists for SYSRDR.

Action: Perform the IPL procedure. Instead of pressing INTERRUPT on the console, press START on the card reader.

Default: None.

0I10A GIVE IPL CONTROL COMMANDS

Cause: IPL awaiting control commands (ADD, DEL, and SET).

Action: Enter IPL Control Commands on 1052.

Default: None.

0I11A PREVIOUS COMMAND INVALID

Cause: Control command printed on previous line is invalid, or

Set command missing.

Action: Type corrected command if a 1052 is available; otherwise, re-IPL.

Default: None.

0I12A DEL COMMAND IS FOR NON-EXISTENT DEVICE

Cause: Device referred to in DEL command printed on previous line was not provided for when system was generated.

Action: Type corrected command if 1052 is available; otherwise, re-IPL.

Default: None.

0I13I CANNOT ADD PUB--INSUFFICIENT TABLE SPACE

Cause: No room in tables to add PUB for device specified in preceding ADD command. The ADD command is ignored. It cannot be accepted unless a DEL command first releases an entry in the PUB table.

0I14I CANNOT ADD TEB--INSUFFICIENT TABLE SPACE

Cause: No room in tables to add TEB (tape error block) for device specified in preceding ADD command. The ADD command is ignored. It cannot be accepted unless a DEL command first releases a tape entry in the PUB table.

0I15I PUB ALREADY EXISTS

Cause: Preceding ADD command specifies a device already provided for in PUB table. The ADD command is ignored.

0I16A NO PUB GIVEN FOR SYSRES

Cause: SET command encountered, indicating no more ADD or DEL commands, but no PUB exists for SYSRES.

Action: Give an ADD command for SYSRES, and then reissue SET command. If using card reader for IPL, correct error and restart IPL.

Default: None.

0I17A NO PUB GIVEN FOR SYSLOG

Cause: SET command encountered, indicating no more ADD or DEI commands. If using SYSLOG for IPL, no PUB exists for SYSLOG. If using SYSRDR for IPL no PUB exists for SYSRDR.

Action: Give an ADD command for SYSLOG and then reissue SET command, or

Give an ADD command for SYSRDR and restart the IPL procedure.

Default: None.

0I18A SET COMMAND NOT GIVEN

Cause: End-of-block B given on 1052, but no SET command was previously given.

Action: Give SET command.

Default: None.

0I20I DOS IPL COMPLETE

Cause: IPL procedure is complete. Control is returned to job control.

0I22I ALLOCATION ERROR INSUFFICIENT CORE

Cause: Insufficient core to allocate the SYSGEN core specifications. Reassemble the supervisor.

0I23I DASD ON NON-FILE PROTECTED CHANNEL

Cause: DASD device specified on channel where file protect coverage was not generated, or

DASD device not specified in DASD file protect option. Delete the wrong device, and reissue the SET command.

0I24A CANNOT ADD, INSUFFICIENT SAB TABLE SPACE

Cause: There is no room in the tables to add the seek address block for this DASD device.

Action: Enter DEL command to release the entry in the PUB table, then re-enter the ADD command if a 1052 is available; otherwise, re-IPL.

Default: None.

The following information pertains to messages 0P08 through 0P60. The complete format for these messages is:

```
OPxxy z mmm...mmm SYSxxx=cuu CCSW=ccwwwwwwwwwwwwwwww SNS=ssssssssssss CCB=aaaaaa
  SK=bbbbccccchhhh

Example:  0P13D R ADDR MRKER SYS000=133 CCSW3100018A02000005
  SNS=000200000000 CCB=001886 SK=000000050005
```

The message is broken down as follows.

Format	Identification
0P	Identifies the message as being generated by physical IOCS.
xx	Message number (which also appears in byte 0 of main storage when the 1052 printer-keyboard is inoperable).
y	Action code (which also appears in byte 1 of main storage when the 1052 printer-keyboard is inoperable).
z	Operator code.
m...m	Message indicating the specific I/O error condition.
SYSxxx	Specific logical unit on which the I/O error occurred. Appears as SYSxxx if CCB address is not available at the time the error occurred. Appears as SYSCTL whenever the logical program needs a logical unit to perform an I/O command (e.g., READ).
cuu	Channel and unit on which the I/O error occurred (appears in bytes 2 and 3 of main storage when the 1052 printer-keyboard is inoperable).
cc	Command code of last CCW executed. This will appear as 00 if the CCW address is outside the user's core.
w...w	Channel status word.
s...s	Sense bytes obtained from device in error.
a...a	Address of user's CCB (will appear as zeros if unavailable at the time of the error). For unavailable or meaningless fields, the following is printed: CCSW 'NOT AVAILABLE' SNS=000000000000,CCB=000000
SK	Appears only when the error occurred on a DASD device. It is the address of the track on which the error occurred. (bbbb will appear as BBBB if no CCB is available).

There are six possible combinations for action codes y and z if the systems communications device is a 1052 (Refer to Figure 10.) If the communications device is other than a 1052, refer to Appendix H for related information. The messages 0P08-0P60 result in different combinations of action codes, depending upon the particular device responsible for issuing the message. For this reason, no (y) or (z) entry appears for these messages in the manual. However, when these messages are issued by the system, they always contain one of the six combinations for action code, listed in Figure 10. The opeator action in each case is determined in accordance with this action code. Because the error recovery phases are in the Supervisor, no other program in a multiprogramming system can run while the error recovery phases are waiting for a response to a message containing a "D" in byte 1.

Action Codes		Operator Action				
		Response to Message				
Y	Z	CANCEL	IGNORE	RETRY	Ⓑ	Other/Remarks
A		X[1]	--	--	-	To continue: 1. Perform any manual recovery procedures implied by the error condition. (Refer to component description and operating procedures manual for the device.) 2. Ready the device. No response is necessary
I	I	--	--	--	-	Message is printed and error is ignored. The data is posted to the program and processing continues.
I	C	--	--	--	-	Message is printed and job is canceled.
D	I	X	X	--	-	If reply is IGNORE, the error is ignored and the data posted to the program and processing continues.
D	IR	X	X	X	X	If reply is IGNORE, the error is ignored and the data posted to the program and processing continues. If reply is RETRY or Ⓑ, the channel program is retried.
D	R	X	--	X	X	If reply is RETRY or Ⓑ, the channel program is retried.

[1] Press REQUEST and enter CANCEL [BG,F1,F2]

Figure 10. Operator Response to System Messages 0P08-0P36 When Communications Device Is a 1052 Printer-Keyboard.

0P08 INTERV REQ

Cause: Intervention required on unit check. Device not ready. If 1052, replace the paper supply and press the request key on the 1052.

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P09 BUSOUT CHK

Cause: Unit check (parity error). The first card in the 1442 or 2520 punch must be replaced before retry.

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P10 EQUIP CHK

Cause: Unit check (equipment check for a tape unit).

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P11 DATA CHK

Cause: Unit check (data check), or

Tape inoperative with mode setting.

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P12 VERIFY CHK

Cause: Unit check (data check on verify command).

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P13 ADDR.MRKER

Cause: Unit check (missing address marker). The IBM 2841 Storage Control Unit has received two index points without an intervening address marker.

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P14 OVERRUN

Cause: Unit check overrun on Channel Status Word Channel chaining check).

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P15 SEEK CHK

Cause: Unit check (seek check). Access mechanism has failed to reposition properly, or

Home address compare fails after automatic head switching on a multitrack operation.

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P16 DTA CHK CT

Cause: Unit check (data check in count field).

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P17 FILE PROT

Cause: Unit check (command reject-file protect). A command that resulted in a command reject was issued to a tape that is file-protected and positioned at its load point. For a DASD file, this message indicates a set file mask notation. It can be caused by an illegal seek operation. On a system with DASD file protection, it can also indicate an attempt to write on SYSRES.

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P18 COMM REJT

Cause: Unit check (command reject). Invalid CCW command or command sequence was detected. For example, an attempt was made to write on a tape with the file protection ring removed. (This tape is not positioned at load point. Otherwise, message OP17 would be issued.) If the punch is not run out at the completion of a 2540 punch-feed-read job, this message may also occur at the start of the next job.

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P19 UNDETR ERR

Cause: Unit check (no valid sense byte).

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P20 ERR ON REC

Cause: Unit check (sense operation or attempting to reposition a tape). Error occurs during device error recovery.

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P21 NRF-MADDMK

Cause: Unit check (no record found or missing address markers), or

Home address or RO cannot be found on the track.

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P22 BALST CELL

Cause: Unit check (seek check or missing address marker), or

Ballast cell located (2321 only).

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P23 BLNK STRIP

Cause: Unit check (no record found or missing address marker). An uninitialized strip has been located (2321 only).

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P24 PROG CHECK

Cause: Channel Status Word program check. Programming error detected by channel. Sense data printed with this message is meaningless.

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P25 PROT CHECK

Cause: Channel Status Word protection check. A user read command attempted to read into a main storage area outside the problem area. All problem program I/O requests are executed with protection key (BG=1, F2=2, and F1=3). Sense data printed with this message is meaningless.

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P26 INVAL SEEK

Cause: User-specified invalid seek address.

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P27 UNKNOWN DEVICE

Cause: Unit check. Error recovery attempted on unsupported device. This message may also appear after a BTAM job is canceled.

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P28 CHAN DTCHK

Cause: Channel Data check.

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P29 BK INTO LP

Cause: Backward command into load point on tape drive.

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P30 CONVRT CHK

Cause: Data converter check on tape.

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H is 1052 is not available.

0P31 DVC NOT OP

Cause: I/O device is not operational.

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P32 NOT COMPAT

Cause: Tape is in a mode which the drive cannot read.

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P33 UCB PARITY

Cause: Bad parity in universal character buffer. Buffer must be reloaded.

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P34 BCH NM OFF

Cause: A batch numbering update command was issued, and the batch numbering device is switched off. This message is issued only for the 1419 equipped with the dual address adapter.

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Figure 10 if 1052 is not available.

0P35 NON RECOV

Cause: Optical reader must be reloaded with an input tape if 1285 or 1287 is reading tape. In document mode, the 1287 must be reloaded and restarted.

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P36 NO REC FND

Cause: A no-record-found condition has occurred.

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P37 DISEN FAIL

Cause: The disengage command was not executed because the photo cell at detection station number 2 is inoperative. This message applies only to 1412/1419.

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P38 INVAL FONT

Cause: Unsupported bit configuration for bits 2-5 in byte 4 of format control word specifies an invalid font (1287 document mode).

Action: Refer to Figure 10 if 1052 is available.

Default: Refer to Appendix H if 1052 is not available.

0P60 INTV RQD FOR [BG, F1, F2]

Cause: Issued by Attention routine when a device has an operator intervention condition outstanding and the 1052 request key has been pressed. The message is issued on a program basis.

Action: Reply IGNORE to continue with the attention routine. The intervention required condition for the specified partition remains pending. Or

Reply CANCEL [BG,F1, F2] for the specified partition to cancel the job. The program cannot be canceled by issuing a CANCEL command following the READY FOR COMMUNICATIONS message.

0PnnA INVALID RESPONSE

Cause: Operator response was invalid. nn designates the message to which the invalid response was made.

Action: Enter valid response.

Default: Enter valid reply and press INTERRUPT.

0P70I JOB xxxxxxxx CANCELED DUE TO UNDEFINED LOGICAL UNIT

Cause: Program issued an EXCP for a logical unit for which there is no LUB. If a dump is taken, general register 1 will contain a pointer to the CCB in question.

0P71I JOB xxxxxxxx CANCELED DUE TO DEVICE NOT ASSIGNED

Cause: Program issued an EXCP for a logical unit which is not assigned to a physical device. If a dump is taken, general register 1 will contain a pointer to the CCB in question.

0P72I JOB xxxxxxxx CANCELED DUE TO READING PAST /& STATEMENT

Cause: Program ignored the occurrence of a /& (end-of-job) statement on SYSRDR or SYSIPT.

0P73I JOB xxxxxxxx CANCELED DUE TO I/O ERROR

Cause: Program does not accept I/O error.

0P74I JOB xxxxxxxx CANCELED DUE TO I/O OPERATOR OPTION

Cause: Operator typed CANCEL on 1052 in response to an I/O error message.

0P75I JOB xxxxxxxx CANCELED DUE TO I/O ERROR QUEUE OVERFLOW

Cause: Number of I/O errors pending simultaneously has exceeded Supervisor capacity.

0P76I JOB xxxxxxxx CANCELED DUE TO INVALID DASD ADDR

Cause: DASD file protect limits exceeded, or

Incorrect record reference for SYSIN or (SYSLST, SYSPCH) on 2311 or 2314.

0P77I JOB xxxxxxxx CANCELED DUE TO INVAIID ADDRESS

Cause: Attempt was made to load a problem program phase into an address outside main storage or outside the requester's area (background or foreground). This message can also be issued if the problem program requires more core than is currently allotted to the partition in which the program is run.

0P78I JOB xxxxxx CANCELED DUE TO UNRECOGNIZED CANCEL-CODE

Cause: An IBM-supplied compcnent failed to post a valid CANCEI code.

0P79I JOB xxxxxxxx CANCELED DUE TO NO LONG SEEK

Cause: A DASD command chain in file protected environment does not start with a command code X'07'.

0P83A JOB xxxxxxxx CANCELED DUE TO SUPERVISOR CATALOG FAILURE-RERUN JOB

Cause: Program was canceled in job stream in which a supervisor was to be cataloged.

Action: Re-IPL the system, and rerun the catalog procedure.

Default: None.

0R00I RESTRT UNIT INVALID SYSxxx

Cause: The symbolic unit specified on // RSTRT card is not assigned to the proper device. The system cancels the job.

0R01I INSUFFICIENT CORE SPACE FOR PROGRAM-CANNOT RESTART

Cause: When the checkpoint was taken, the program indicated a need for more main storage space than that available at restart time. The system cancels the job.

0R02I PROB PROG START CHANGED - CANNOT RESTART

Cause: The starting address of the partition being restarted must be the same as when the checkpoint was taken. The system cancels the job.

0R03I CHKPT NO. xxx NOT FOUND ON SYSxxx=cuu

Cause: The checkpoint number specified on the // RSTRT card was not found before two consecutive tapemarks were found, or before the extents were exceeded on the disk. The system cancels the job.

0R04I EXTENTS FOR SYSxxx NOT EQUAL DEVICE TYPE

Cause: When the file-protect DASD extents were saved, the device type specified was different from the device type now assigned to SYSxxx. The system cancels the job.

0R05I NO MORE AVAILABLE JIBS

Cause: No more available JIBS could be found while restart was restoring file protect extents. The system cancels the job.

0R06I TAPE MARK IN DATA SYSxxx=cuu

Cause: While repositioning SYSxxx, a tapemark was found (operator may have improperly positioned tape or may have incorrectly mounted tape). The system cancels the job.

0R10I UNIT NOT DASD SYSxxx

Cause: The device assigned to SYSxxx, which is specified in the table of DASD devices with volume serial number to be written on SYSLOG, is not a DASD device. The system cancels the job.

0R11I INVALID BB FOR VERIFY SYSxxx

Cause: The value specified by the fifth operand in the CHKPT macro for SYSxxx is invalid. The system cancels the job.

0R13I DEVICE NOT A TAPE SYSxxx

Cause: SYSxxx specified for repositioning is not a tape. The system cancels the job.

0R14A SER xxxxxx SEQxxxx SYSxxx=cuu

Cause: Standard label set on SYSxxx is provided for operator verification. The message indicates the serial number and the sequence number of the label found.

Action: Type CANCEL to cancel job, or

Mount new tape and type NEWTAP to continue, or

Type IGNORE to continue with mounted reel.

Default: Job continues with mounted reel.

0R16A SERIAL NO. xxxxxx SYSxxx=cuu

Cause: Volume serial number of DASD device assigned to SYSxxx for operator verification.

Action: Type CANCEL to cancel the job, or

Mount new pack and type NEWPAC to continue processing, or

Type IGNORE to continue with the mounted pack.

Default: Job continues with mounted pack.

0S00I JOB xxxxxxxx CANCELED

Cause: Error in problem program caused job termination.

0S01I JOB xxxxxxxx CANCELED DUE TO OPERATOR INTERVENTION

Cause: Operator typed CANCEL on 1052.

0S02I JOB xxxxxxxx CANCELED DUE TO PROGRAM REQUEST

Cause: CANCEL macro instruction issued by problem program.

0S03I PROGRAM CHECK INTERRUPTION - HEX LOCATION nnnnnn - CONDITION CODE m - interruption cause

Cause: Program check interruption caused job termination. The system cancels the job.

0S04I ILLEGAL SVC - HEX LOCATION nnnnnn - SVC CODE nn

Cause: Refer to Appendix I.

0S05I PHASE xxxxxxxx NOT FOUND

Cause: Phase named in a FETCH (SVC 1) or LOAD (SVC 4) macro instruction or referred to by an SVC 2 cannot be found. The system cancels the job.

0S06I JOB xxxxxxxx CANCELED DUE TO PHASE NOT FOUND

Cause: This message is issued instead of message OS05I when a logical transient is canceled.

0S07I PROBLEM PROGRAM PSW nnnnnnnnnnnnnnnn

Cause: Gives the condition of the problem program immediately before its cancellation. Message OS07I is printed on SYSLST in conjunction with a descriptive cancelation message printed on SYSLOG.

0S08I LOG. TRANS. EXECUTING JOB CANCELED

Cause: Indicates that the cancellation described by an associated message occurred while a logical transient was executing. This message is printed on SYSLST. Further details such as Phase name, hex location, SVC code, condition code, and interruption cause are not available when cancellation occurs in a logical transient routine. This message is always followed by another CANCEL message.

0S09I JOB xxxxxxxx CANCELED DUE TO ILLEGAL SVC.

Cause: This message is issued instead of OS04I when a logical transient is canceled.

0S10I PROGRAM xxxxxxxx COMPLETED

Cause: Message issued at the normal completion of a foreground program running under single program initiation.

0S11I JOB xxxxxxxx CANCELED DUE TO PROGRAM CHECK

Cause: This message is issued instead of 0S03I when a logical transient is canceled.

These messages are issued by Job Control for background and foreground programs run under the batch processing option. Where n is the third digit of the message number, n specifies the field being processed in a Job Control command/statement when the error was detected. It does not necessarily indicate the field in error. The command/statement being processed when the error is detected will always be the last command/statement printed immediately before the error message. For example, if the ASSGN statement

```
// ASSGN SYSRDR,IGN
```

is processed, message number 1A04D is issued. The number 4, corresponding to n, indicates that the fourth field in the ASSGN statement is being processed when this error is detected. In this case, the fourth field is in error. The IGN parameter can never be assigned to SYSRDR (refer to ASSGN command). If the ASSGN command

```
ASSGN SYSRDR,IGN
```

is processed in the same situation, message 1A03D is issued. In this case, the IGN parameter is the third operand.

The operator response of Ⓑ informs Job Control that it should stop reading input from SYSLOG. If the operator responds Ⓑ to a control card error, the error is ignored and processing continues.

1A0nD INVALID I/O ASSIGNMENT

Cause: Previous ASSGN specified invalid logical or physical unit, or

Previous ASSGN attempted to assign the ignore parameter to SYSRDR or SYSIPT, or

Previous ASSGN attempted to make a temporary assignment to SYSPCH or SYSLST when the system was in the SYSOUT mode, or

Previous ASSGN attempted to make an alternate assignment to a logical unit currently unassigned, or

Previous ASSGN attempted to make an alternate assignment to SYSOUT when the system was not in SYSOUT mode, or

Previous ASSGN attempted to make a temporary alternate assignment to a logical unit in standard mode, or

Previous ASSGN attempted to make a standard alternate assignment to a logical unit in standard mode.

Action: Enter a new ASSGN command, or

Enter CANCEL command to cancel job, or

Enter IGNORE to ignore assignment.

Default: Invalid assignment is ignored.

1A1nD CONFLICTING I/O ASSIGNMENT

Cause: Previous ASSGN attempted to assign a logical unit to a physical device already assigned to a conflicting function. For example, no physical device can be assigned to both SYSOUT and SYSIN, or

Previous ASSGN attempted to assign a logical unit to a physical device assigned to another program.

Action: Enter a new assignment, or

Type CANCEL to cancel job, or

Type IGNORE or Ⓑ to ignore the assignment and continue processing.

Default: Invalid assignment is ignored.

1A2nD INVALID DEVICE TYPE

Cause: Logical function inconsistent with physical device type. For example, SYSRDR assigned to a printer. This message may occur if CLOSE is issued to a file that is not assigned.

Action: Enter new assignment, or

Type CANCEL to cancel job, or

Type IGNORE or Ⓑ to ignore the assignment and continue processing.

Default: Invalid assignment is ignored.

1A3nD NO FREE JIBS

Cause: Too many alternate units or temporary assignments have been made. In SPI mode, refer to HOLD command.

Action: Use LISTIO command to get listing of assignments, and then

Make standard assignments for temporary assignments, or

Type in a new ASSGN command, or

Type CANCEL to cancel job, or

Type IGNORE or Ⓑ to ignore the statement and continue processing.

Default: Statement is ignored.

1A4nD INVALID LOGICAL UNIT SPECIFICATION

Cause: The previous statement contained a logical unit that was invalid. This could result from:

- Format error, or
- The order of the unit is greater than the number of IUB's contained in the class. For example, SYS021 is specified when space has been allocated for 21 logical units.

Action: Type in the correct logical unit, or

Type CANCEL to cancel job, or

Type IGNORE or Ⓑ to ignore the statement and continue processing.

Default: Invalid statement is ignored.

1A5nD DEVICE NOT-DEFINED

Cause: The physical unit X'cuu' specified in the previous statement was not added at IPL or system generation.

Action: Enter the command with a different physical unit, or

Perform a new IPL and add the physical unit, or

Type CANCEL to cancel job, or

Type IGNORE or Ⓑ to ignore the statement and continue processing.

Default: Statement is ignored.

1A6nD UNIT CURRENTLY UNASSIGNABLE

Cause: The previous ASSGN attempted to assign SYSLOG while a foreground program was active in the system, or

A UNA command was issued to an active foreground program.

Action: Type IGNORE or Ⓑ to ignore the assignment, and continue processing, or

Type CANCEL to cancel job, or

Wait until foreground job is complete and resubmit assignment.

Default: Assignment is ignored.

1A7nD INVALID DEVICE STATUS

Cause: The previous ASSGN attempted to assign a physical unit that is in a "down" status resulting from a DVCDN command, or

The previous ASSGN attempted to assign SYSLST or SYSPCH to a file-protected tape, or

The device specified in the DVCUP command was never previously placed in a down status by a DVCDN command, or

The previous MTC command specified a physical device assigned to a foreground program.

Action: Type in a new assignment, or

Type IGNORE or Ⓑ to ignore the statement or command, and continue processing, or

Type CANCEL to cancel job.

Default: Invalid statement or command is ignored.

1A80D SYSTEM FILE OPEN FAILURE

Cause: The previous assignment failed to open.

Action: The logical unit has been unassigned by the IBM Supervisor. Type a new assignment, or

Type IGNORE or Ⓑ to continue processing, or

Type CANCEL to cancel job, or

Submit new label information to correct the failure. Resubmit the assignment.

Default: Assignment is ignored.

1A9nD SYSTEM FILE NOT CLOSED

Cause: The previous ASSGN attempted to assign a system unit before closing the unit, or

An UNBATCH command was issued while a disk system file was assigned.

Action: Use the CLOSE command with its optional operand to close and assign the logical unit, or

Type IGNORE or Ⓑ to ignore the assignment, and continue processing, or

Type CANCEL to cancel job.

Default: Assignment is ignored.

1C00A ATTN. cuu

Cause: A unit exception has been detected on the specified channel and unit.

Action: If unit is a card reader: Refill the reader and type IGNORE or Ⓑ to continue processing, or

Reassign unit to a tape or disk or another card reader, or

If unit is a tape or disk, type IGNORE or Ⓑ to read the next record. (See Note.) Or,

Mount a new tape or disk and reassign the same unit or assign another unit, or

Type CLOSE SYSxxx (where xxx is the system logical unit). Either mount a new tape or disk and reassign the same unit, or assign another unit. (See Note.)

Note: If operating in a multiprogramming environment, the operator should issue the STOP command, otherwise the 1052 printer-keyboard will be locked and other partitions will be unable to access SYSLOG.

Default: Condition is ignored.

1C10A PLEASE ASSIGN [SYSRDR, SYSIPT, SYSLNK]

Cause:

1. A statement or command was to be read from SYSRDR, which is not assigned, or

2. An INCLUDE statement with no operand was found and SYSIPT is not assigned, or

3. A // OPTION CATAL or LINK was detected and SYSLNK is not assigned.

Action:

1. Assign SYSRDR and reply Ⓔ.

2, 3. Assign logical unit to proper device and resubmit statement, reply Ⓔ, or

Type CANCEL to cancel job, or type IGNORE or Ⓔ to continue processing.

Default: Assignment is ignored.

1C20D READ COMMAND NOT GIVEN

Cause: During single program initiation, a response of Ⓔ was given on the 1052 before issuing a READ command.

Action: Submit READ command and reply Ⓔ, or

Continue with initiation statement on SYSLOG.

Default: None.

1C3nA PROGRAM NOT FOUND

Cause: The phase name specified on the EXEC command or statement is not in the core image library.

Action: Correct phase name in EXEC statement, or

Reply CANCEL to terminate the job.

Default: Job canceled.

1C4nI NO ROUTINE LINKAGE

Cause: An external interrupt was given and no STXIT was supplied by the problem program for batch processing job, or

The MSG command was given, and no STXIT was supplied by the problem program for the referenced foreground area.

1C5nI PROCESSING ROUTINE ACTIVE

Cause: External interrupt given, and external interrupt routine is currently active, or

MSG command given, and foreground area external interrupt routine is active.

1C6nD TIMER NOT AVAILABLE

Cause: The TIMER command was issued and the timer feature is not present, or

The timer feature is now in use by another program area.

Action: If timer feature is not present, command is ignored. Otherwise, wait for timer feature to become inactive and resubmit job.

Default: Command is ignored.

1C70D nnnnn RECORDS REMAINING ON [SYSPCH, SYSLST]

Cause: The minimum number of remaining records on the DASD device has been reached or exceeded during the previous job. The DASD device was assigned to the logical unit specified at system generation with SYSFIL or specified at SET time with RCLST or RCPCH. nnnnn tells how many record spaces now remain.

Action: Submit new EXTENT 's, CLOSE file, and reassign file to the device containing the new extents, or

CLOSE and reassign to non-DASD device, or

Type IGNORE or Ⓑ to continue processing.

Default: The condition is ignored until the next entry.

1C8nD END of EXTENT ON [SYSRDR, SYSIPT, SYSPCH, SYSLST, SYSLNK]

Cause: End of extent or filemark has been reached on the specified logical unit.

Note: End of extent on SYSLNK requires that all preceding linkage editor control statements, (including // OPTION CATAL or LINK), be resubmitted.

Action: Submit new EXTENT 's, CLOSE the logical unit, and reassign the file to the device containing the new extents, or

CLOSE the logical unit and reassign the file to a non-DASD device. If SYSRDR or SYSIPT is assigned to SYSIN, CLOSE must be given for SYSIN.

Default: None.

1C90A NEW SUPERVISOR CATALOGED RE-IPL TO CONTINUE

Cause: Self-explanatory.

Action: Restart the IPL procedure to continue processing.

Default: None.

1I00A READY FOR COMMUNICATIONS

Cause: Either PAUSE command was issued, or SYSLOG was in use as the communications device when the last // EXEC was given.

Action: Enter any valid command or statement.

Default: None.

1I10I ASSIGNMENTS RELEASE

Cause: All assignments to the physical device X'cuu', specified in the DVCDN command, have been released and reset to an unassigned status.

1I20I JOB xxxxxxxx CANCELED DUE TO OPERATOR INTERVENTION

Cause: The CANCEL command was given to Job Control.

1I32D AREA NOT ACTIVE

Cause: The attention routine CANCEL command was given, and specifies an inactive area.

Action: Submit CANCEL command for proper area, or

Reply Ⓑ to continue processing if single program initiation is not in progress, or

If single program initiation is in progress, type CANCEL or continue with initiation.

Default: Command ignored.

1I40D REQUEST CANCEL

Cause: Operator made a second attention request before the first request could be honored.

Action: Respond with CANCEL command for the proper area (BG, F1, F2), or

Type Ⓑ to ignore message. The original request remains pending.

Default: Job is canceled.

1I50I JOB xxxxxxxx CANCELED DUE TO END OF EXTENT ON SYSLNK

Cause: Self-explanatory.

1I60A READY FOR COMMUNICATIONS

Cause: The operator pressed the REQUEST key.

Action: Enter any valid command.

Default: None.

1I70I JOB jobname CANCELED DUE TO CONTROL STATEMENT ERROR

Cause: Control statement error.

1I80I MAGNETIC TAPE ERRORS

Cause: This message identifies the following tape errors:

```
CH.  UNIT PRE RDE WTE ERG NRC

 C     uu nnn nnn nnn nnn nnn
```

where: PRE=Permanent Redundant Read
RDE=Read Error Entry
WTE=Write Error Entry
ERG=Erase Gaps (Record erased after write errors)
NRC=Noise Record Count

1L04A INVALID LABEL SET ON cuu

Cause: Tape label on the channel and unit specified (cuu) is neither an IBM-standard label nor a file mark.

Action: Mount a new tape and type RETRY to continue processing, or

Type IGNORE to generate a label and continue processing. The label generated is a file mark, if the first record was not VOL1. It is an HDR1 record with 72 binary zeros followed by a tapemark, if the first record following the volume record was not HDR1.

Default: Job canceled.

1L0nD INVALID LABEL SYNTAX

Cause: Expiration date less than creation date in DLBL statement, or

In EXTENT statement:

- Type operand in extent and disk label conflict, or
- Type and sequence number operands in EXTENT conflict.

Or

Lower and upper BIN numbers are not equal, or

The upper limit exceeds the maximum allowable amount, or

Lower limit is greater than upper limit, or

For split extents (type 128) lower head number is greater than upper head number, or

Sequence number exceeds 255, or

Lower or upper EXTENT is zero.

Action: Correct invalid statement, or

Type CANCEL to cancel initiation or job, or

Type IGNORE or Ⓔ to continue processing.

Default: None.

1L1nD LABEL AREA EXHAUSTED

Cause: Insufficient core allocated for label storage, or

Disk label space is exhausted.

Action: Type CANCEL to cancel initiation or job.

Default: None.

1P0nD INVALID ALLOCATION

Cause: An allocation was attempted that:

- Would cause an active background or foreground area to be reduced or result in less than 10K for batch processing in any partition, or
- Would take core from the background area currently in use for label storage, or
- Would cause the relocation of an active program, or
- ATTN routine allocation was attempted that would decrease the background area.

Action: Type valid allocation command.

Default: Invalid command is ignored.

1P1nD AREA NOT AVAILABLE

Cause: A START or BATCH command was given that specified an active foreground area, or

No foreground area has been allocated, or

The foreground area allocated for a batched job is too small.

Action: Specify another area, or

Type CANCEL to cancel initiation.

Default: Command is ignored.

1S0nD INVALID STATEMENT

Cause: The referenced field (n) is invalid (i.e., misspelled, wrong size, non-numeric character in numeric field). This message can also appear if a command is given at the wrong time (e.g., ASSGN issued in ATTN routine).

Action: Correct statement or command in error (through 1052 or SYSRDR), or

Type CANCEL to cancel job initiation, or

Type IGNORE or Ⓑ to continue processing.

Default: Invalid statement or command is ignored.

1S1nD STATEMENT OUT OF SEQUENCE

Cause: Label statement submitted in wrong order, or

Extent sequence number out of order, or

PHASE, ACTION, ENTRY, or INCLUDE encountered without a preceding LINK or CATAL option, or

// EXEC LNKEDT encountered and no // OPTION LINK or CATAL, or

Incomplete label set when either /& was encountered while in STDLBL mode, or

// EXEC encountered while in either STDLBL or USRLBL mode, or

// OPTION LINK encountered when the CATAL option was previously specified, or

Label type not DASD, SD, or TAPE while operating in STDLBL mode, or

More than one extent submitted for a file with filename=IJSYSxy, where x is numeric, or

// EXEC encountered after an Autotest ./ ATEOF card. In this case, n = 3, or

During FORTRAN or COBOL, PL/I compilation, serious errors were detected and the system does not allow linkage editing.

Action: Correct statement in error, or

Type CANCEL to cancel job or initiation, or

Type IGNORE to continue processing.

Default: Statement ignored.

Statements in error (messages 2100I through 2170I) are printed in the following formats.

1. If there is no 12-2-9 code in column 1 of the card image, columns 2-80 of the card image are printed in EBCDIC.

2. If there is a 12-2-9 code in column 1 of the card image:

Print Positions	Contains Card Image Columns
8-15	73-80 (identification) in EBCDIC
17-19	2-4 (Card type) in EBCDIC
21-26	6-8 (assembled origin) in hexadecimal
28-31	11-12 (number of bytes in card image) in hexadecimal
33-36	15-16 (ESID number) in hexadecimal

The remainder of the line depends on the type of card image (ESD or non-ESD).

1. If non-ESD type card image, print positions 38-128 are printed from columns 17-52. These positions are printed in hexadecimal in blocks of 9 words (36 bytes), separated by one block.

2. If ESD type card image, print positions 38-128 contain 3 fields of ESD information. Each field is 16 columns:

Columns	Contain
17-24	ESD item name in EBCDIC
25	ESD type in EBCDIC
26-28	Assembled origin in hexadecimal
30-32	Length/ESD number in hexadecimal

The action taken by the system when these messages are issued depends upon the option specified in the Linkage Editor ACTION statement. If CANCEL is specified as the operand of the ACTION statement, the job is canceled. If CANCEL is not specified, processing continues.

2100I Content of statement in error.

Cause: Invalid input card type.

2101I Content of statement in error.

Cause: Invalid operation in control statement.

2102I Content of statement in error.

Cause: Non-decimal or non-hexadecimal character in decimal or hexadecimal field.

2110I Content of statement in error.

Cause: Invalid or missing field limiter on control statement.

2111I Content of statement in error.

Cause: An operand field is greater than the maximum length on a user-prepared control statement or REP card.

2112I Content of statement in error.

Cause: An operand field is missing.

2113I Content of statement in error.

Cause: Control statement extends beyond column 71.

2114I Content of statement in error.

Cause: Submodular namelist is too long.

2115I Content of statement in error.

Cause: NOAUTO expected, but not found.

2116I Content of statement in error.

Cause: Control statement present between first ESD and END statements of a module.

2120I Content of statement in error.

Cause: Phase name duplicated.

2121I Content of statement in error.

Cause: Phase name lower in sequence than $$A, or phase name begins with an *.

2122I Content of statement in error.

Cause: Symbol or phasename designated in origin was not previously defined.

2123I Content of statement in error.

Cause: Previous phase processed contained no valid storage assignment.

2124I Content of statement in error.

Cause: Phase origin is negative.

2125I Content of statement in error.

Cause: PHASE statement encountered during AUTOLINK.

2130I Content of statement in error.

Cause: Relocatable library not present.

2131I Content of statement in error.

Cause: Module requested by INCLUDE statement not present in relocatable library.

2132I Content of statement in error.

Cause: Too many nesting levels of INCLUDE attempted.

2133I Content of statement in error.

Cause: Nested submodular INCLUDE.

2135I Content of statement in error.

Cause: ACTION statement has invalid operand.

2136I Content of statement in error.

Cause: ACTION MAP specified, but SYSLST was not assigned.

2140I Content of statement in error.

Cause: ESD item of invalid type.

2141I Content of statement in error.

Cause: Duplicated ESID number:

- No END statement in last module, or
- Duplicate ESD cards, or
- Extraneous ESD card.

2142I Content of statement in error.

Cause: ESD entry point label is not contained in an ESD named control section or COMMON.

2143I Content of statement in error.

Cause: Invalid duplication of entry point label.

2144I Content of statement in error.

Cause: Invalid ESID number, or control dictionary and linkage table overlap.

2145I Content of statement in error.

Cause: Origin of control section not on a doubleword boundary.

2146I Content of statement in error.

Cause: COMMON has the same label as a named control section or an entry point label.

2147I Content of statement in error.

Cause: ESD entry point label does not belong to a defined control section.

2150I Content of statement in error.

Cause: Load address encountered outside phase.

2151I Content of statement in error.

Cause: Invalid delimiter on REP card.

2155I Content of statement in error.

Cause: The TXT or REP card or address constant in an RLD record does not have an ESID pointer to a defined control section.

2156I Content of statement in error.

Cause: Invalid format of RLD card.

2158I Content of statement in error.

Cause: END statement should contain the length of the control section, but does not.

2170I Content of statement in error.

Cause: ESID number not previously processed.

2181I LINKAGE EDITOR CANNOT CONTINUE

Cause: No valid storage assignment in final phase.

2182I LINKAGE EDITOR CANNOT CONTINUE

Cause: No END record encountered before ENTRY statement. The system cancels the job.

2185I LINKAGE EDITOR CANNOT CONTINUE

Cause: An error occurred during the linkage editing of a $ phase. The system cancels the job.

2191I LINKAGE EDITOR CANNOT CONTINUE

Cause: End of file or extents exceeded on SYS001, or

SYS001 not assigned to disk or tape.

The system cancels the job.

2192I LINKAGE EDITOR CANNOT CONTINUE

Cause: End of librarian work area. Too many phases to process. The system cancels the job.

2193I LINKAGE EDITOR CANNOT CONTINUE

Cause: Core image library space exceeded. The system cancels the job.

2194I LINKAGE EDITOR CANNOT CONTINUE

Cause: Disk error - an invalid no-record-found condition occurred. The system cancels the job.

2195I LINKAGE EDITOR CANNOT CONTINUE

Cause: Multiprogramming in process while attempting to linkage edit and catalog a new Supervisor. The system cancels the job.

2199I ERROR HAS OCCURRED DURING LINKAGE EDITING

Cause: Printed on SYSLOG if any errors 2100I through 2170I have occurred. These messages appear on SYSLST. Processing continues if CANCEL is not specified in the ACTION statement. If CANCEL is speicifed, the job is canceled.

3C30I STATEMENT OUT OF ORDER

Cause: Message output is on SYSLST only. NEWVOL statement was received after ALLOC or COPY statement, or

ALLOC was received after COPY, COPYC, COPYR, COPYS, or NEWVOL statements.

3C66I FILE IJSYSRS NOT DEFINED ON SYS002

Cause: Message output is on SYSLST only. The file IJSYSRS was defined for other than SYS002.

3C67I SYS002 ASSIGNED TO WRONG PHYSICAL UNIT

Cause: Message output is on SYSLST only. SYS002 is assigned to the same pack as SYSRES, or

SYS002 is assigned to a different device type than SYSRES.

3M10I INVALID OPERATION

Cause: Message output is on SYSLST only. Operation field of control statement contains something other than CATALR, CATALS, DELETC, DELETR, DELETS, RENAMC, RENAMR, RENAMS, CONDS, ALLOC, DSPLY, UPDATE, PUNCH, CONDI, RDRCTRL, COPY, COPYC, COPYR, COPYS, or NEWVOL. The system cancels the job.

3M11I INVALID CARD IN MODULE

Cause: Message output is on SYSLST only. This indicates that the module to be cataloged into the relocatable library contains an invalid statement. Valid statements have one of the following formats:

- 12-2-9 code in column 1 of an 80-byte record, or in column 2 of an 81 byte record. These records may be types: ESD, RLD, TXT, REP, END, or SYM. Or,
- A record with a blank in column 1 of an 80-byte record, or in column 2 of an 81-byte record. Any combination of valid characters may follow.

3M21I INVALID OPERAND

Cause: Message output is on SYSLST only. There is an invalid or blank operand in the librarian control statement.

3M22I PHASE *** INVALID PHASE NAME -PROGRAM NOT CATALOGED

Cause: Message output is on SYSLST only. OPTION CATAL was specified, but phase card is missing. The system cancels the job.

3M 3I MISSING OR INVALID HEADER, BKEND, OR MACRO CARD. XXXXXX FIELD IS INVALID

Cause: Message output is on SYSLST only. BKEND/MACRO statement is missing or contains invalid label, operation, or operand. XXXXXX states invalid condition or operand, or header BKEND/MACRO card is missing.

3M24I MISSING OR INVALID BKNAME ON CATAIS CONTROL CARD

Cause: Message output is on SYSLST only. BKNAME is on CATALS card. The entry is too long, there is no prefix for sublibrary, an invalid character is in prefix or name, or 1st character is non-alphabetic.

3M25I ERROR IN CARD SEQUENCE NO. -- CARD NO. xxxxx

Cause: Message output is on SYSLST only. A card is out of sequence in the book to be cataloged into the source statement library.

3M26I ERROR IN CARD COUNT -- ACTUAL COUNT xxxx

Cause: Message output is on SYSLST only. The card count in the EKEND statement does not correspond to the actual card count (including the BKEND card).

3M27I INVALID V.M, 0.0 ASSUMED, CATALOG ATTEMPTED

Cause: Message output is on SYSLST only. There are invalid digits in 'V.M', missing 'V' or 'M', or the 'V' or 'M' value is too large.

3M33I xxxxxxxx NOT IN LIBRARY

Cause: Message output is on SYSLST only. This message refers to a private library (SYSSLB or SYSRLD) if assigned. The phase, module, or book requested was not found in the library.

3M34I EOF ON SYSIPT -- END STATEMENT MISSING

Cause: Message output is on SYSLST only. END card is missing from module to be cataloged. The system cancels the job.

3M43I NO [RELOCATABLE, SOURCE STATEMENT] LIBRARY

Cause: Message output is on SYSLST only. This message refers to a private library (SYSSLB or SYSRLD) if assigned. The library called for does not exist or has no entries. The system cancels the job.

3M52I [CORE IMAGE, RELOCATABLE, SOURCE STATEMENT] DIRECTORY IS FULL

Cause: Message output is on SYSLST only. This message refers to a private library (SYSSLB or SYSRLB) if assigned. There is not enough space in the library directory while trying to catalog.

3M53I [RELOCATABLE, SOURCE STATEMENT] LIBRARY IS FULL

Cause: Message output is on SYSLST only. This message refers to a private library (SYSSLB or SYSRLB) if assigned. There is not enough space in library while trying to catalog.

3M54I XXXXXXXX ALREADY IN LIBRARY

Cause: Message output is on SYSLST only. The phase, module, or book to be renamed is already in the library.

3M62I TRACK EXCEED CYLINDERS IN [CORE IMAGE, RELOCATABLE, SOURCE STATEMENT] LIBRARY

Cause: Message output is on SYSLST only. The number of tracks allocated for the directory exceeds the total number of cylinders alloted for the directory/library.

3M63I [CORE IMAGE, RELOCATABLE, SOURCE STATEMENT] DIRECTORY ALLOCATION IS TOO SMALL

Cause: Message output is on SYSLST only. There is an insufficient number of tracks allocated for this directory.

3M64I [CORE IMAGE, RELOCATABLE, SOURCE STATEMENT] LIBRARY ALLOCATION IS TOO SMALL

Cause: Message output is on SYSLST only. There is an insufficient number of cylinders allocated for this library.

3M65I INVALID EXTENTS DEFINED FOR [SYS002, SYSRLB, SYSSLB, SYSRES]

Cause: Message output is on SYSLST only. The extents defined for the file IJSYSRS do not cover track 1, cylinder 0 or are not large enough to contain the file, or

The parameter on ALLOC or NEWVOL statement requires larger extents than those defined for IJSYSRS, IJSYSRL, or IJSYSSL.

3M66I ZERO ALLOCATION SPECIFIED FOR [CORE IMAGE, PRIVATE RELOCATABLE, PRIVATE SOURCE STATEMENT] LIBRARY

Cause: Message output is on SYSLST only. A zero allocation was specified for the indicated library.

3M67I REALLOCATION IGNORED ON 2314

Cause: Message output is on SYSLST only. Reallocation was specified for a 2314 system.

3M68I [STATEMENT, C1 PARAMETER] IGNORED DUE TO MULTIPROGRAMMING IN PROCESS

Cause: Message output is on SYSLST only. User asked for a condense of the core image library or for an allocation when multiprogramming was in process in F1 or F2.

3M70I UNRECOVERABLE DISK ERROR. REBUILD SYSTEM

Cause: An unrecoverable error has occurred on SYSRES, SYSRLB, or SYSSLB. The system cancels the job.

3M80I REORGANIZATION OF [CORE IMAGE, RELOCATABLE, SOURCE STATEMENT] LIBRARY IN PROCESS

Cause: This message refers to a private library (SYSSLB, or SYSRLB) if assigned. The system is not operable while a condense function is executing. If no parameter is specified, the unit is a 2311.

3M81I NO RECORD FOUND ON [SYSRES, SYSRLB, SYSSLB] AT CCHHR

Cause: Message output is on SYSLST only. A no-record-found condition occurred while reading or writing. The system cancels the job.

4000I RETRY

Cause: This message always follows message 0P10 EQUIP CHECK. CRDERR=RETRY was specified in the DTF parameter and indicates that a retry was made to the punch errors on the device experiencing an equipment check.

4110A NO VOL1 LBL FOUND TLBL=xxxxxx filename SYSxxx=cuu

Cause: This message is preceded by the last tape record read. A standard label output was specified, but no volume label was found.

Action: Type CANCEL or Ⓑ to cancel job, or

Mount a new tape and type NEWTAP to continue processing, or

Type a six character volume serial number to cause a VOL1 label to be written. Processing continues.

Default: Job canceled.

4111A NO VOL1 LBL FOUND filename SYSxxx=cuu

Cause: This message always follows the last tape record read. A standard label input was specified, but no volume label was found.

Action: Type CANCEL or Ⓑ to cancel, or

Type IGNORE to continue processing.

Default: Job canceled.

4112A VOL SERIAL NO. ERROR TLBL=xxxxxx filename SYSxxx=cuu

Cause: This message is preceded by the volume serial number of the last tape record read. The volume serial number on the tape does not agree with the serial number in the tape label statement.

Action: Type CANCEL or Ⓑ to cancel job, or

Mount a new tape and reply NEWTAP to continue processing, or

Type IGNORE to continue processing with the mounted reel. (File serial number on TLBL is overridden by volume serial number.) Or,

Type BYPASS to continue processing a multi-reel input file. File serial number on TLBL is not overridden by volume serial number.

Default: Job canceled.

4113D NO HDR1 LBL FOUND filename SYSxxx=cuu

Cause: This message is preceded by the last tape record read. A standard label input was specified, but no standard header label was found.

Action: Type CANCEL or Ⓑ to cancel job, or

Type IGNORE to continue processing.

Default: Job canceled.

4114A FILE SEQ NO. ERROR filename SYSxxx=cuu

Cause: This message is preceded by the header label file sequence number for the last tape record read. A standard label input was specified and a multifile data set is positioned beyond the desired file.

Action: Type CANCEL or Ⓑ to cancel job, or

Remount or reposition the file and type RETRY to continue processing.

Default: Job canceled.

4115A FILE SER. NO. ERROR TLBL=xxxxxx filename SYSxxx=cuu

Cause: This message is preceded by the header label file serial number of the last tape record read. The wrong file or file set is mounted. The tape header label serial number does not agree with the serial number in the tape label statement.

Action: Type CANCEL or Ⓑ to cancel job, or

Mount correct reel and type NEWTAP to continue processing.

Default: Job canceled.

4116A VOLUME SEQ. NO. ERROR filename SYSxxx=cuu

Cause: This message is preceded by the header label volume sequence number of the last tape file read. The wrong volume of the set is mounted. The volume sequence number in the header label does not agree with the tape label statement.

Action: Type CANCEL or Ⓑ to cancel job, or

Mount correct reel and type NEWTAP to continue processing.

Default: Job canceled.

4117D NO TM FOUND ON READBK filename SYSxxx=cuu

Cause: This message is preceded by the last tape record read. Read backward was specified and no tapemark was found as the first record. IOCS cannot correctly position the file.

Action: Type CANCEL or Ⓑ to cancel job, or

Type IGNORE to continue processing. (File is considered OPEN but no further checking or positioning is done.)

Default: Job canceled.

4118D FILE ID ERROR, READBK filename SYSxxx=cuu

Cause: This message is preceded by the trailer label file ID of the last tape record read. Read backward was specified and an error was detected in checking the trailer label. File ID field does not agree with the information in the tape label statement.

Action: Type CANCEL or Ⓑ to cancel job, or

Type IGNORE to continue processing.

Default: Job canceled.

4119A FILE UNEXPIRED filename SYSxxx=cuu

Cause: This message is preceded by the header label of the last tape record read. The expiration date on mounted scratch tape has not been reached, and the tape is still active.

Action: Type CANCEL or Ⓑ to cancel job, or

Mount a new tape and type NEWTAP to continue processing, or

Type IGNORE to continue processing with the mounted reel.

Default: Job canceled.

4120I TAPE POSITIONED WRONG filename SYSxxx=cuu

Cause: Standard label output was specified without tape rewind option. The tape is not positioned at load point and no prior standard label set was found for creating the required label set. The system cancels the job.

4121A NO ALTERN DRIVE ASSGN SYSxxx=cuu

Cause: No alternate drive assigned to SYSPCH, SYSLST, or SYSOUT assigned to an output tape.

Action: Mount a new tape and type NEWTAP to continue processing.

Default: None.

4122I EOV ENCOUNTERED SYSxxx=cuu

Cause: The end-of-volume was reached while writing on SYSLST, SYSPCH, or SYSOUT assigned to an output tape.

4123D WRONG POSITN, READBK filename SYSxxx=cuu

Cause: This message is preceded by the last tape record read. Read backward was specified and no tapemark or label was found as second record. IOCS cannot position the tape correctly.

Action: Type CANCEL or Ⓑ to cancel job, or

Type IGNORE to continue processing. (File is considered OPEN but no further checking or positioning is done.)

Default: Job canceled.

4124I TOO MANY UHL's filename SYSxxx=cuu

Cause: Standard label output was specified. LABADDR=name was specified in the DTF, and the user attempted to process more than eight user header labels. The system cancels the job.

4125D VOL1 LBL FOUND filename SYSxxx=cuu

Cause: This message follows the last tape record read. An unlabeled output file was specified and a volume label was found on the tape.

Action: Type CANCEL or Ⓑ to cancel job, or

Mount a new tape and type NEWTAP to continue processing, or

Type IGNORE to continue processing. The volume label and all other labels and files on the reel are destroyed.

Default: Job canceled.

4126I EOV ENCOUNTERED filename SYSxxx=cuu

Cause: The DTF parameter HDRINFO=YES was specified, and this message is printed each time the EOV routine is called.

4130A EOF OR EOV INQUIRY filename SYSxxx=cuu

Cause: A tapemark was sensed on an input file, and standard or nonstandard labels are specified. The system cannot determine whether the condition is EOF or eov.

Action: Type CANCEL or Ⓑ to cancel job, or

Type EOF if end of file or EOV if end of volume.

Default: Job canceled.

4131D BLOCK COUNT ERROR filename SYSxxx=cuu DTF=xxxxxx LBL=xxxxxx

Cause: This message is preceded by the DTF and LBL count. A discrepancy was detected while checking the block count for an input file. DTF count is the number of records read, LBL=xxxxxx is the trailer label block count.

Action: Type CANCEL or Ⓑ to cancel job, or

Type IGNORE to continue processing.

Default: Job canceled.

4132D ERROR IN FILE ID filename SYSxxx=cuu

Cause: This message is preceded by the header label file ID for the last tape record read. An error was detected in the header label file ID field (input file).

Action: Type CANCEL or Ⓑ to cancel job, or

Type IGNORE to continue processing with mounted reel, or

Mount a new tape and type NEWTAP to continue processing.

Default: Job canceled.

4133D ERROR IN HDR LBL filename SYSxxx=cuu

Cause: This message is preceded by the header label fields that are possibly in error. An error was detected in one of the following fields in the header label: generation number, version number, or creation date.

Action: Type CANCEL or Ⓑ to cancel job, or

Type IGNORE to continue processing with the mounted reel, or

Mount a new tape and type NEWTAP to continue processing.

Default: Job canceled.

4140A NO ALTERN DRIVE ASSIGN filename SYSxxx=cuu

Cause: An end-of-volume condition occurred for an input or output file and no alternate drive is specified.

Action: Type CANCEL or Ⓑ to cancel job, or

Mount a new reel on specified drive and type NEWTAP to continue processing.

Default: Job canceled.

4144A 1600 BPI TAPE MOUNTED filename SYSxxx=cuu

Cause: Standard label or output workfiles specified on 9-track drive. The user has specified 800 bpi density on a dual density drive, but the mounted reel is written in 1600 bpi.

Action: Type CANCEL or Ⓑ to cancel job, or

Mount a new tape and type NEWTAP to continue processing, or

Type BYPASS to continue processing the mounted reel at 1600 bpi.

Default: Job canceled.

4151I HDR1 LBL INFORMATION filename SYSxxx=cuu

Cause: This message is preceded by the file header label of the last tape record read. HDRINFO=YES was specified in the DTF parameter. This message is printed each time the OPEN forward routine is called. The information included is: file ID, file serial number, volume sequence number, file sequence number, generation number, version number, creation date, and expiration date.

4170A FILE PROTECTED TAPE filename SYSxxx=cuu

Cause: The tape on the channel and unit specified for use as an output file (cuu) is file protected.

Action: Mount a non-file protected tape, and type NEWTAP to continue processing.

Default: Job canceled.

4171A UNEXPIRED FILE SYSxxx=cuu

Cause: This message is preceded by the header label file ID. The HDR1 label on the specified tape file has an unexpired date.

Action: Mount a new tape and type NEWTAP to continue processing, or

Type IGNORE to continue processing with the mounted reel. The HDR1 label will be replaced with a HDR1 record containing 76 binary zeros followed by a tapemark.

Default: None.

4172A INVALID LABEL SET SYSxxx=cuu

Cause: The label on the specified tape is neither an IBM-standard label nor a tapemark.

Action: Mount a new tape and type NEWTAP to continue processing, or

Type IGNORE to generate a tapemark and continue processing with the mounted reel. The tape is considered OPEN and no further checking is done.

Default: None.

4183I INVALID LOGICAL UNIT filename SYSxxx=cuu

Cause: The specified logical unit is ignored or unassigned, or it is assigned to a unit other than a tape. If the logical unit is ignored or unassigned, the physical unit (cuu) will not be printed in the message. The system cancels the job. If the DEVADDR parameter is omitted from an SD file and no EXTENT cards are used, the filename is also omitted, and SYSxxx is SYS255.

4184D NEED FILE PROTECT RNG filename SYSxxx=cuu

Cause: An output file requires a file protect ring.

Action: Place a file protect ring in reel and type IGNORE to continue processing.

Default: Job canceled.

Messages 4n00 through 4n90 appear as shown in the following example:

```
BG FILEA

   4444A OVERIAP ON UNEXPRD FILE     IJSYSLN   SYSLNK=135  111111
```

where

*IJSYSLN=filename
*SYSLNK=cuu (symbolic unit and address)
111111 (volume serial number where applicable)

*This information, if not available, may not appear in the messages.

The second digit of the message number indicates the type of disk file for which the message was issued. These types are:

n=2 -- Indexed sequential file
n=3 -- Sequential input disk OPEN
n=4 -- Sequential output disk OPEN
n=5 -- Sequential disk CLOSE
n=6 -- Direct access input file
n=7 -- Direct access output file
n=8 -- Common OPEN/CLOSE routines
n=9 -- Sequential disk work file

For those messages that accept a reply of CANCEL, the response can be CANCELV or DSPLYV instead.

CANCELV -- Instead of typing CANCEL to terminate the job, the operator can type CANCELV to get a VTOC dump on SYSLST, if SYSLST is a printer. (See Appendix F, Figure 19 for sample output listing.)

DSPLYV -- The operator can display the VTOC by typing DSPLYV, provided the proper assignments have been made. this reply does not terminate the job, but reissues the same message prior to the VTOC display request. (See Appendix F, Figure 19 for sample output listing.)

4n00I NO LABEL SPACE IN VTOC or NO RECORD FOUND

Cause: No space is available in the VTOC to write a new label for an output file, or

A no-record-found condition occurred while searching for a new label space. The system cancels the job.

4n01A NO FORMAT 1 LABEL or NO RECORD FOUND

Cause:

1. The Format 1 label for this file was not found while searching key, or

   A no-record-found condition occurred while searching for the label.

2. No format 1 label found while Job Control was opening a system file. This message is followed by 1A80D.

Action:

1. Job canceled.

2. Processing continues. (Reply to message 1A80D.)

Default: Job canceled.

4n02I NO RECORD FOUND

Cause: A no-record-found condition occurred while searching for a Format 2 label. The system cancels the job.

4n03I NO FORMAT 3 LABEL FOUND

Cause: A no-record-found condition occurred while searching for a Format 3 label. The system cancels the job.

4n04I NO FORMAT 4 LBL IN VTOC or NO RECORD FOUND

Cause: The VTOC pointer address in the volume label does not point to a Format 4 label, or

A no-record-found condition occurred while searching for a Format 4 label.

The system cancels the job.

4n06I NO STANDARD VOL 1 LABEL or NO RECORD FOUND

Cause: The record on cylinder 0, track 0, record 3 is not a standard VOL1 label, or

A no-record-found condition occurred while searching for this label.

The system cancels the job.

4n07I NO RECORD FOUND

Cause: A no-record-found condition occurred while attempting to read an extent record. The system cancels the job.

4n08D NO UTL0 FILE MARK FOUND or NO RECORD FOUND

Cause: A no-record-found condition occurred while searching for a user header label or trailer label or while searching key for UTL0 file mark to obtain an address for writing the first trailer label.

Action: Type CANCEL, Ⓑ, or CANCELV to cancel job, or

Type DSPLYV to obtain VTOC dump, and then type IGNORE to continue processing. Any other response causes an INVALID RESPONSE message.

Default: Job canceled.

4n09I NO RECORD FOUND

Cause: A no-record-found condition occurred while searching the VTOC for file labels. The system cancels the job.

4n31D VOLUME SEQUENCE ERROR

Cause: The volume sequence number on the current pack is not equal to that supplied in the DLBL (or DLAB) information, or

Pack is not being processed sequentially.

Action: Type CANCEL, Ⓑ, or CANCELV to cancel job, or

Type DSPLYV to obtain a VTOC, then type IGNORE to continue processing. Any other response causes an INVALID RESPONSE message.

Default: Job canceled.

4n33A EQUAL FILE ID IN VTOC

Cause: The 44-byte filename is being used to create more than one Format 1 label in the VTOC spanning two or more jobs. This message may also occur if a job is run again after previously being canceled.

Action: Type CANCEL, Ⓑ, or CANCELV to cancel job, or

Type DSPLYV to obtain a VTOC dump, then type DELETE to delete the unexpired file with the identical 44-byte filename, and continue processing. Any other response causes an INVALID RESPONSE message.

Default: Job canceled.

4n34I CURRENT FILE LBL DELETED

Cause: An extent previously overlapped the file limits and a response was given to delete the file. The system cancels the job.

4n35I DELETED WORKFILE LABEL

Cause: An extent for another previously opened file overlaps the work file limits and a response was given to delete the work file. The system cancels the job.

4n36I NO MORE AVAIL/MATCH EXTENT

Cause: All available extents are exhausted through consecutive OPEN's or an extent cannot be found to match those extents from a previous POINT macro. The system cancels the job.

4n38D USER HDR LBL IS NOT STD.

Cause: The first three characters of the user's header label do not contain "UHL".

Action: Type CANCEL, Ⓑ, or CANCELV to cancel job, or

Type IGNORE to continue processing. DSPLYV can also be entered before IGNORE to obtain a VTOC dump.

Default: Job canceled.

4n39D USER TRL LBL IS NOT STD

Cause: The first three characters of the user's trailer label do not contain "UTL".

Action: Type CANCEL, Ⓑ, or CANCELV to cancel job, or

Type DSPLYV to obtain a VTOC dump, then type IGNORE to continue processing. Any other response causes an INVALID RESPONSE message.

Default: Job canceled.

4n40A EXTENT OVERLAP ON ANOTHER

Cause: Overlapping extents were specified for the file.

Action: Type CANCEL, Ⓑ, or CANCELV to cancel job, or

Type DSPLYV to obtain a VTOC dump, then type IGNORE to bypass the extent that overlaps the previously opened extents. Any other response to this message causes an INVALID RESPONSE message.

Default: Job canceled.

4n40I EXTENT OVERLAP ON ANOTHER

Cause: Overlapping extents were specified for the file.

4n41A EXTENT OVERLAP ON VTOC

Cause: An extent limit overlaps the limits of the VTOC.

Action: Type CANCEL, Ⓑ, or CANCELV to cancel job, or

Type DSPLYV to obtain a VTOC dump, then type BYPASS to bypass the extent that overlaps the VTOC. Any other response causes an INVAIID RESPONSE message.

Default: Job canceled.

4n41I EXTENT OVERLAP ON VTOC

Cause: An extent limit overlaps the limits of the VTOC. The system cancels the job.

4n42A NO MATCHING EXTENT

Cause: The incoming extent did not match the extents within the labels for the file.

Action: Type CANCEL, Ⓑ, or CANCELV to cancel job, or

Type DSPLYV to obtain a VTOC dump, then type BYPASS to bypass the present extent and continue processing. Any other response causes an INVALID RESPONSE message.

Default: Job canceled.

4n44A OVERIAP ON UNEXPRD FILE

Cause: The extent card limits overlap the extent limits of an unexpired file.

Action: Type CANCEL, Ⓑ, or CANCELV to cancel job, or

Type DSPLYV to obtain a VTOC dump, then type DELETE to delete the overlapped file. (The operator shoul never take this action unless specified by the user. Under normal operating conditions, the SYSRES label file should never be deleted. Also, in a multiprogramming system, extents should never be deleted across partition boundaries.)

Default: Job canceled.

4n45I TOO MANY EXTENTS

Cause: More than 3 extent types are specified for an indexed sequential file, or

More than 1 extent has been entered for an IBM-supplied program, or

For DA files, more than 15 extents are specified for a volume with user labels, or

For DA files, more than 16 extents are specified for a volume without user labels.

The system cancels the job.

4n46I DISCONT INDEX EXTENTS

Cause: The master and cylinder index limits are not continuous. The system cancels the job.

4n47A EXTENTS NOT ON SAME UNIT

Cause: All the extents for a unit must be on the same disk pack.

Action: Type CANCEL, Ⓑ, or CANCELV to cancel job, or

Type DSPLYV to obtain a VTOC dump, then type BYPASS to continue processing.

Default: Job canceled.

4n48I [SYSIN, SYSOUT] UNSUPPORTED

Cause: System input/output file is requested by the problem programmer for disk but is not supported by the system. The system cancels the job.

4n49I DATA TRACK LIMIT INVALID

Cause: The indexed sequential prime data area lower limit does not start on track 0, or

The upper limit does not end on track 9 for a 2311 or track 19 for a 2321.

The system cancels the job.

4n50A NO MORE AVAILABLE EXTENTS

Cause: There were no more extents available when the OPEN output was issued.

Action: Type CANCEL, Ⓑ, or CANCELV to cancel job, or

Type DSPLYV to obtain a VTOC dump, then type a new extent in the form: nnnnnnn where (n...n) equals the track address relative to track zero. This entry can have leading zeros and be from 1 to 7 characters in length. The OPEN creates a two track extent using this relative address and the information from the last EXTENT opened.

Default: Job canceled.

4n51I SYSUNITS NOT IN SEQUENCE

Cause: Programmer symbolic units on the extent card must be in ascending sequence. The system cancels the job.

4n52I DISCONT TYPE 1 EXTENTS

Cause: The prime data extents for a multitrack file do not start on cylinder 1, track 0, or they end on cylinder 199, track 9 (subcell 19, strip 5, cylinder 4, track 19 for 2321). The system cancels the job.

4n54I DSK XTN ENTRY TABLE FULL

Cause: The disk extent table in the DTF has no more room for entries. The system cancels the job.

4n55A WRONG PACK, MOUNT nnnnnn

Cause: The wrong pack is mounted. nnnnnn is the serial number of the correct pack.

Action: Type CANCEL, Ⓑ, or CANCELV to cancel job, or

Mount the correct pack and respond NEWPAC to continue processing.

Default: Job canceled.

4n58I NO EXTENT FOR OUTPUT FILE

Cause: A direct access or sequential output file requires an extent. The system cancels the job.

4n59A INVALID EXTENT

Cause: The extent does not fall within the valid limits for the specified device while processing direct access or sequential disk files.

Action: Type CANCEL, Ⓑ, or CANCELV to cancel job, or

Type DSPLYV to obtain a VTOC dump, then type BYPASS to ignore the extent and continue processing.

Default: Job canceled.

4n59I INVALID EXTENT

Cause: Extent does not fall within the specified limits for the specified device while processing an indexed sequential file. The system cancels the job.

4n60I NO EXTENTS, ALL BYPASSED

Cause: No extents were opened because they were eliminated by previous BYPASS options. The system cancels the job.

4n61I INVALID DLBL FUNCTION

Cause: The disk label does not agree with the DTF file type. For example, an ISC was specified in the disk label statement for a non-load function. The system cancels the job.

4n62I NO PRIME DATA EXTENT

Cause: No type 1 extent exists for an indexed sequential file. The system cancels the job.

4n63I LOAD FILE NOT CLOSED

Cause: The programmer did not close load file.

4n66A 1 TRACK USER LBL EXTENT

Cause: User labels must specify more than one track on the first extent.

Action: Type CANCEL, Ⓑ, or CANCELV to cancel job, or

Type DSPLYV to obtain a VTOC dump, then type BYPASS to bypass the extent in error and continue processing. Any other response causes an INVALID RESPONSE message.

Default: Job canceled.

4n70I 1ST XTNT CD NOT INDX VOL

Cause: On a retrieval function for an indexed sequential file, SYSxxx did not contain the indexes. SYSxxx was on the first disk label for this data set. The system cancels the job.

4n71I EXTENT INFO NEEDED

Cause: No extent information was given for an indexed sequential file on an Add or Add-Retrieve operation. The system cancels the job.

4n72I MOD AND DTF INCOMPATIBLE

Cause: An ISAM module assembled with the Prime Data in a storage add option cannot process any DTF table assembled without this option. The specified logical unit refers to the cylinder index. The system cancels the job.

4n77A EXTENT ENTRY ERROR-- RETRY

Cause: An error was detected in one or more extent fields.

Action: Type CANCEL, Ⓑ, or CANCELV to cancel job, or

Type DSPLYV to obtain a VTOC dump, then type a new extent in the form: nnnnnnn where (n...n) equals the track address relative to track zero. This entry can have leading zeros and be from 1 to 7 characters long. The OPEN creates a two track extent, using this relative address and the information from the last extent opened.

Default: Job canceled.

4n80I INVALID FILE TYPE

Cause: DTF table for this file has an invalid type code. The system cancels the job.

4n81I NO LABEL INFORMATION

Cause: The label for this file cannot be found in SYSRES label storage area for this job type (i.e., BG, F1, or F2). The system cancels the job.

4n83I INVALID LOGICAL UNIT

Cause: The device assigned to the logical unit is not the device specified in the DTF, or

The logical unit is not assigned, or

The logical unit is assigned the ignore parameter.

The system cancels the job.

4n84D NEED FILE PROTECT RING

Cause: An output file requires a file protect ring.

Action: Type CANCEL, Ⓑ, or CANCELV to cancel job, or

Place a file protect ring in the reel and type IGNORE to continue processing.

Default: Job canceled.

4n85I SYSxxx AND SYSyyy ARE ASSIGNED TO THE SAME PHYSICAL UNIT

Cause: Incorrect assignments. The system cancels the job.

4n87I SYS FILE EXTENT EXCEEDED

Cause: Extent exceeded on system output file. The system cancels the job.

4n90I NO JIBS AVAILABLE

Cause: The JIB table is full. The system cancels the job. In SPI mode, refer to HOLD command.

In the following BTAM messages,

```
DTFBT=aaaaaa
DECB=aaaaaa
TI=xxxx
DC=ddddddddd
```

where (aaaaaa) is the address, (xxxx) the terminal identification of the first two characters pointed to via the DECB entry field, and (d...d) are asterisks or the dial characters.

For messages 4B00-4B09 (inclusive) and 4B21, 4B24, 4B25, and 4B34, the action taken by the system is determined by the CANCEL operand in the BTMOD macro instruction.

If CANCEL=YES-- the current operation is discontinued and the job is canceled.

If CANCEL=NO -- the current operation is discontinued and control is returned to the user's program at the next sequential instruction.

For other BTAM error messages, the first character of the message (after the message number) is sometimes shown as P. For these messages accompanying job cancellation, the first character will be C rather than P.

4B00I USER REFERRED TO CLOSED DTFBT
DTFBT=aaaaaa DECB=aaaaaa

Cause: DTFBT was not opened.

4B01I DTFBT FIELD IMPROPERLY INITIALIZED
DTFBT=aaaaaa DECB=aaaaaa

Cause: Error in the DTFBT.

4B02I DECB FIELD IMPROPERLY INITIALIZED
DTFBT=aaaaaa DECB=aaaaaa

Cause: Error in the DECB.

4B03I MULTIPLE WAIT COUNT NEGATIVE
DTFBT=aaaaaa DECB=aaaaaa

Cause: User specified negative WAIT count.

4B04I MULTIPLE WAIT COUNT EXCEEDS ECBLIST SIZE
DTFBT=aaaaaa DECB=aaaaaa

Cause: More events than ECB's specified.

4B05I ATTEMPT TO PROCESS NON-BTAM BUFFER
DTFBT=aaaaaa DECB=aaaaaa

Cause: User referred to non-BTAM buffer.

4B06I UNEXPECTED PROGRAM ERROR IN RELBUF
DTFBT=aaaaaa DECB=aaaaaa

Cause: Buffer cannot be returned to pool.

4B07I REQBUF COUNT NEGATIVE
DTFBT=aaaaaa DECB=aaaaaa

Cause: User requested negative number of buffers.

4B08I RESETPL DECB AND LCB DECB NOT SAME
DTFBT=aaaaaa DECB=aaaaaa

Cause: User referred to wrong DECB for line.

4B20I P ERR IN ERP SYSnnn=cuu
DECB=aaaaaa TI=xxxx DC=ddddddddd

Cause: Error occurred in error recovery procedure.

4B21I P CHAN DATCK SYSnnn=cuu
DECB=aaaaaa TI=xxxx DC=ddddddddd

Cause: Channel data check.

4B22I P SHOULD NOT SYSnnn=cuu DECB=aaaaaa TI=xxxx DC=dddddddd

Cause: Condition other than those defined in this list. This error is nct recoverable.

4B23I P CHAIN CHK SYSnnn=cuu DECB=aaaaaa TI=xxxx DC=dddddddd

Cause: Chaining check.

4B24I P PROGRAM CK SYSnnn=cuu DECB=aaaaaa TI=xxxx DC=dddddddd

Cause: Programming error detected by channel.

4B25I P PROTECT CK SYSnnn=cuu DECB=aaaaaa TI=xxxx DC=dddddddd

Cause: A user read command attempted to read into a main storage area outside the problem area.

4B26I P UNIT EXCEPTION SYSnnn=cuu DECB=aaaaaa TI=xxxx DC=dddddddd

Cause: Unit exception.

4B27I P EQUIP CK SYSnnn=cuu DECB=aaaaaa TI=xxxx DC=dddddddd

Cause: Unit check (equipment check).

4B28I P LOST DATA SYSnnn=cuu DECB=aaaaaa TI=xxxx DC=dddddddd

Cause: Unit check (lost data).

4B29I P TIME OUT SYSnnn=cuu DECB=aaaaaa FI=xxxx DC=dddddddd

Cause: The communication line has been idle for the time-out period specified by the transmission control unit or terminal control unit and the active command is Read.

4B30I P INTERV REQ SYSnnn=cuu DECB=aaaaaa TI=xxxx DC=dddddddd

Cause: Intervention required on unit check. Device not ready.

4B31I P BUS OUT CK SYSnnn=cuu DECB=aaaaaa TI=xxxx DC=dddddddd

Cause: Unit check (parity error).

4B32I P DATA CK SYSnnn=cuu DECB=aaaaaa TI=xxxx DC=dddddddd

Cause: Unit check (data check).

4B33I P OVERRUN SYSnnn=cuu DECB=aaaaaa TI=xxxx DC=dddddddd

Cause: Data lost because data service could not be obtained within the byte interval of the addressed unit.

4B34I P COMMAND RJ SYSnnn=cuu DECB=aaaaaa TI=xxxx DC=dddddddd

Cause: The command cannot be executed because it is not defined for the unit. This condition can also occur if:

- The problem program (using binary synchronous support) issues a non-transparent WRITE macro with the sequence DLE STX in the output message, or
- The problem program issues a WRITE command to a line that is not enabled.

4B40I LINE ERROR THRESHOLD REACHED SYSnnn=cuu

Cause: The error count has reached its specified limit.

4B60I LINE DELAY

Cause: Time needed to enable the line.

4B98I TR=xxx/yyy, DC=zzz,yyy,IR=xxx/yyy, TO=xxx/yyy

Cause: This message is always preceded by 4B40I. The error count has reached specified limit.

4B99I CSW17=nnnnnnnnnnnnnn CCW=nnnnnnnnnnnnnnnn

Cause: Th message is always follows messages 4B20I - 4B34I (inclusive).

4MR1I EXTERNAL INTERRUPT I/O ERROR filename SYSxxx

Cause: An I/O error occurred while processing an external interrupt.

4MR2I SCU NOT OPERATIONAL filename SYSxxx

Cause: The secondary control unit for the 1419 is not operational.

4Q00I LINE ERROR THRESHOLD REACHED
SYSnnn=cuu TR=xxx/yyy DC=xxx/yyy
IR=xxx/yyy TO=xxx/yyy HU=xxx/yyy
RDC=xxx/yyy WDC=xxx/yyy

Cause: The line error count has reached its specified limit for a non-audio line, where:

TR--transmissions
DC--data check
IR--intervention required
TO--time out
xxx--specified limit
yyy--number that have occurred.

For an audio line:

HU--hang up
RDC--read data check
WDC--write data check

4Q01I INVALID OPEN SEQ DTFQT ADDR=aaaaaa
DTFQT NAME=bbbbbbbb

Cause: DASD message file was not the first QTAM file opened. The system cancels the job.

4Q02I INVALID DTFQT TYPE
DTFQT ADDR=aaaaaa
DTFQT NAME=bbbbbbbb

Cause: User has specified an invalid data file type. The system cancels the job.

4Q03I INVALID CLOSE SEQ
DTFQT ADDR=aaaaaa
DTFQT NAME=bbbbbbbb

Cause: DASD message file was not the last QTAM file closed. The system cancels the job.

4Q04I SPECIFIED TERMTBL ENTRY NOT FOUND
DTFQT ADDR=aaaaaa
DTFQT NAME=bbbbbbbb

Cause: User specified a PROCESS program entry that was not defined in the terminal table. The system cancels the job.

4Q05I NO RECORD FOUND filename SYSxxx

Cause: End of label area reached while attempting to read an extent record. The system cancels the job.

4Q06I NO RECORD FOUND filename SYSxxx

Cause: A no-record-found condition occurred while searching for a volume label. The system cancels the job.

4Q07I NO STANDARD VOL1 LABEL filename SYSxxx

Cause: Information at cylinder 0, track 0, record 3 is not a standard volume label.

4Q08I NO RECORD FOUND filename SYSxxx

Cause: A no-record-found condition occurred while searching for a Format 4 label. The system cancels the job.

4Q09I NO FORMAT 4 LBL IN VTOC

Cause: The VTOC pointer address in the volume label does not point to a Format 4 label. The system cancels the job.

4Q10I NO RECORD FOUND filename SYSxxx

Cause: A no-record-found condition occurred on a Search ID equal while retrieving a Format 1 label. The system cancels the job.

4Q11I NO FORMAT 1 LABEL FOUND filename SYSxxx

Cause: No Format 1 label was found in the VTOC on a search key equal. The system cancels the job.

4Q12I FMT1-DLAB UNEQUAL filename SYSxxx

Cause: The file serial number, creation date, or expiration date is not the same in the Format 1 file label and the DLAB information. The system cancels the job.

4Q13I NO MATCHING XTENT filename SYSxxx

Cause: The extents within the labels for the file could not be matched with the incoming extent. The system cancels the job.

4Q14I NO FORMAT 3 LABEL FOUND filename SYSxxx

Cause: A no-record-found condition occurred while searching for a Format 3 label. The system cancels the job.

4Q15I WRONG PACK MOUNTED filename SYSxxx

Cause: The wrong pack is mounted. The system cancels the job.

4Q16I CHECKPOINT EXTENT FORMATTED INCORRECTLY

Cause: The DASD extent specified for the Checkpoint Records file was incorrectly formatted. The system cancels the job.

4Q17I INSUFFICIENT CHECKPOINT WORK AREA

Cause: The main storage work area is tco small to contain a complete checkpoint record. The system cancels the job.

4Q18I NO MORE AVAILABLE XTENTS

Cause: All extents allocated for the DASD message file have been used.

4Q19I QTAM MSG CTRL PROG NOT IN SYSTEM

Cause: An attempt was made to open a QTAM message processing file while the QTAM message control program was not in the system. The system cancels the job.

4Q20I INSUFFICIENT CHECKPOINT EXTENT

Cause: The DASD extent specified for the Checkpoint Records file is too small. The system cancels the job.

4Q21I INSUFFICIENT CHECKPOINT WORK AREA AND EXTENT AREA

Cause: The errors specified in 4Q17 and 4Q20 were both detected. The system cancels the job.

4Q22I TOO MANY MESSAGE QUEUES FILE EXTENTS

Cause: More than 16 extents were specified for the DASD message file. The system cancels the job.

4Q23I MESSAGE QUEUES EXTENT FORMATTED INCORRECTLY

Cause: Message queues are formatted incorrectly. The system cancels the job.

4Q24I QTAM NOW BEGINNING TO USE LAST XTENT

Cause: The last extent allocated for the QTAM DASD message file is now being used. The system cancels the job.

The complete format of messages 4Q25 through 4Q39 is:

```
4QnnI   text   SYSxxx=cuu   LCB=aaaaaa   TI=pppp

DC=ddddddddddd   CSW17=yyyyyyyyyyyyyyy

CCW=ccccccccccccccc SN=ssss
```

where:

4Q	identifies the message (QTAM)
nn	message number
I	information to the operator
text	message text
SYSxxx	symbolic unit assignment of the device
cuu	actual unit assignment of the device
aaaaaa	address of the line Control Block for the line
pppp	terminal ID (polling or addressing characters)
d...d	dial digits for the terminal
y...y	bytes 1 through 7 of the channel status word
c...c	failing channel command word
ssss	sense byte obtained from the device in error

4Q25I ERR IN ERP

Cause: An error occurred during execution of a channel command issued by the error recovery procedures.

4Q26I CHAN DATCK

Cause: Channel data check.

4Q27I SHOULD NOT

Cause: Condition other than those defined in this list. This error is not recoverable.

4Q28I CHAIN CHK

Cause: Chaining check.

4Q29I PROGRAM CHK

Cause: Programming error detected by channel.

4Q30I PROTECT CHK

Cause: A read command attempted to read into a main storage area outside a problem program area.

4Q31I UNIT EXCEP

Cause: Unit exception.

4Q32I EQUIPMT CHK

Cause: Unit check (equipment check).

4Q33I LOST DATA

Cause: Unit check (lost data).

4Q34I TIME OUT

Cause: The communication line has been idle for the time-out period specified by the transmission control unit or terminal control unit, and the active command is Read.

4Q35I INTERV REQ

Cause: Intervention required on unit check. Device not ready.

4Q36I BUS OUT CHK

Cause: Unit check (parity error).

4Q37I DATA CHECK

Cause: Unit check (data check).

4Q38I OVERRUN

Cause: Data lost because data service could not be obtained within the byte interval of the addressed unit.

4Q39I COMMAND RJ

Cause: The command cannot be executed because it is not defined for the unit.

4Q41I LINE ERRORS - CANCEL STATUS
SYSnnn=cuu TR=xxxxxxxxxx
DC=xxxxx IR=xxxxx TO=xxxxx

Cause: QTAM has canceled the program. This message indicates the status of each line after an abnormal end-of-job termination.

TR--transmission
DC--data check
IR--intervention required
TO--time out

4Q42I LINE ERRORS - CLOSEDOWN STATUS
SYSnnn=cuu TR=xxxxxxxxxx
DC=xxxxx IR=xxxxx TO=xxxxx

Cause: QTAM closedown has been issued at the request of problem program. This message indicates the status of each line after a normal end-of-job termination.

TR--transmission
DC--data check
IR--intervention required
TO--time out

4Q50I LINE ENTRY NOT FOUND
DTFQT ADDR=xxxxxx
DTFQT NAME=xxxxxxxx

Cause: An audio line specified in a DTFQT has no entry in the Line Table. The system cancels the job.

4Q51I INVALID WORD ADDRESS
WORD ADDRESS=xxxxxx
WORD LENGTH=xxxx

Cause: The disk address of a 7772 DCV word specified in the word table is invalid. The system cancels the job.

4Q52I INVALID WORD LENGTH
WORD ADDRESS=xxxxxx
WORD LENGTH=xxxx

Cause: The length of a 7772 DCV word specified in the word table is invalid. The system cancels the job.

The complete format of messages 4Q53 through 4Q56 is:

```
4QnnI   text   SYSxxx=cuu   LCB=aaaaaa   WRDC=bbbbbb

WRDI=1111   CSW17=yyyyyyyyyyyyyy

CCW=ccccccccccccccc   SN=ssss
```

WRDC and WRDL are not displayed for message 4Q56.

where:

4Q	identifies the message (QTAM)
nn	message number
I	information to the operator
text	message text
SYSxxx	symbolic unit assignment of the device
cuu	actual unit assignment of the device
aaaaaa	address of the Line Control Block for the line
bbbbbb	core or disk address representation of a DCV word
llll	length of the DCV word
y...y	bytes 1 through 7 of the channel status word
c...c	failing channel command word
ssss	sense byte obtained from the device in error

4Q53I INV DRM AD

Cause: Invalid 7770 drum address.

4Q54I INV WRD AD

Cause: Invalid 7772 DCV word disk or core address.

4Q55I INV BFR LG

Cause: Too short buffer for DCV word.

4Q56I NO BUFFER

Cause: No buffer for DCV words.

4V04I NO RECORD FOUND filename SYSxxx

Cause: A no-record-found condition occurred while searching for a Format 4 label. The system cancels the job.

4V04I NO FORMAT 4 IBL IN VTOC filename SYSxxx

Cause: The VTOC pointer address in the volume label does not point to a Format 4 label. The system cancels the job.

4V06I NO RECORD FOUND filename SYSxxx

Cause: A no-record-found condition occurred while searching for the volume label. The system cancels the job.

4V06I NO STANDARD VOL LABEL filename SYSxxx

Cause: The information at cylinder 0, track 0, record 3 is not a standard volume label. The system cancels the job.

4V09I NO RECORD FOUND filename SYSxxx

Cause: A no-record-found condition occurred while searching for the VTOC for file labels. The system cancels the job.

4V95A SYSLOG OR SYSLST

Cause: The reponse DSPLYV was entered for a VTOC display to a disk open message.

Action: Type CANCEL or Ⓑ to cancel the job, or

SYSLOG Ⓑ to have the VTOC displayed on the printer-keyboard, SYSLST Ⓑ to have the VTOC displayed on the printer. Any other response causes an INVALID RESPONSE message.

Default: Job canceled.

4V96A SYSLST NOT A PRINTER

Cause: The response DSPLYV was entered for a VTOC to be displayed on the printer and SYSLST is not assigned to a printer.

Action: Type CANCEL or Ⓑ to cancel the job, or

SYSLOG Ⓑ to have the VTOC displayed on the printer-keyboard. Any other response causes an INVALID RESPONSE message.

Default: Job canceled.

5E01I JOBSTEP PL/I TERMINATED. LINK OPTION RESET

Cause: Compiler unable to continue because of serious errors in source program. When the next // EXEC LNKEDT or ENTRY statement is encountered, message 1S1nD is issued.

5E02I LINK OPTION RESET

Cause: There is a high probability that the source program contains errors. When the next // EXEC LNKEDT or ENTRY statement is encountered, message 1S1nD is issued.

5E03I POSSIBLE ERRORS IN SOURCE PROGRAM

Cause: The compiler has ignored possible errors in the source program or has assumed default parameters which may lead to possible errors.

5L00I Object time diagnostic (refer to the PL/I Programmer's Guide for individual messages).

Cause: ONSYSLOG was specified as option of an external procedure and an object time error occurred. Processing continues or job is canceled depending upon diagnostic message issued by the PL/I control routine.

5L02A AWAITING REPLY

Cause: DISPLAY statement with REPLY option issued.

Action: Give indicated reply.

Default: None.

All disk sort/merge assignment phase messages that contain an I-suffix in the message code (except 7D80I and 7D92I) contain an Action clause. At the completion of the assignment phase, message 7D90A is issued if any of these assignment phase diagnostic messages have been issued. The operator is then given the opportunity to correct some of these errors. The Action clause associated with each message gives the correct procedure to follow in each case.

7D01I COLUMN 1 NOT BLANK. CONTROL CARD NUMBER xx.

Cause: Column 1 of a sort/merge control card is not blank. xx represents the number of the control statement within the sequence of sort/merge control statements.

Action: Correct the control statement(s) in error. See message 7D90A.

7D02I L3 INVALID FOR ADDROUT OPTION

Cause: The output record length (L3) must:

- Equal 10 when ADDROUT=A, or
- Be at least 11 if ADDROUT=D, or
- Be no greater than 10 bytes plus the length of all control fields if ADDROUT=D and Exit 32 is not specified.

Action: Correct the L3 values in the RECORD statement, or

Correct the ADDROUT entry in the OPTION statement. See message 7D90A.

7D03I STATEMENT DEFINER INVALID - xxxxxx

Cause: The statement definer is invalid or does not appear between columns 2 and 15 in the control statement.

Action: Correct the indicated control statement definer. See message 7D90A.

7D04I NO END CARD FOUND AFTER READING 25 CONTROL CARDS

Cause: More than 25 control statements were read without encountering an END statement. The maximum number of control statements permitted is 25.

Action: Delete all erroneous control cards or insert an END control statement after the sort/merge control statements. See message 7D90A.

7D05A CONTINUATION CONTROL CARD xx DOES NOT START IN COLUMN 16

Cause: A continuation card must begin in column 16. xx represents the number of the invalid control statement.

Action: Correct the continuation control statement in error. See message 7D90A.

7D07I MANDATORY xxxxxx CARD OMITTED

Cause: A mandatory control statement was omitted. The statement definer of the missing card is identified by xxxxxx.

Action: Include the missing control statement in the sort merge control statements. See message 7D90A.

7D08I TYPE RUN NOT KNOWN - SORT OR MERGE NOT SPECIFIED

Cause: Neither a SORT nor a MERGE control statement was included.

Action: Include the SORT or MERGE statement. See message 7D90A.

7D09I NO BLANK AFTER STATEMENT DEFINER - xxxxxxx

Cause: A blank does not separate the statement definer from the first field definer. The first six x's relate to statement definer while the last x indentifies the illegally punched character.

Action: Correct the control statement indicated by leaving at least one blank between the statement and operand definers. See message 7D90A.

7D10I FIELD DEFINER INVALID - xxxxxxxx

Cause: The field definer identified by xxxxxxxx was recognized as an invalid field definer.

Action: Correct the invalid field or operand definer. See message 7D90A.

7D11I VALUES INVALID - xxxxxx

Cause: The value(s) following a field definer is invalid. xxxxxx identifies the invalid value(s).

Action: Correct the control statement that contains the invalid value. See message 7D90A.

7D12I INVAIID FORMAT CODE GIVEN - xx

Cause: The format code for the input data is punched incorrectly or is missing.

Action: Correct the FORMAT value (code) in the SORT or MERGE control statement. See message 7D90A.

7D13I SORT AND MERGE CONTROL CARDS SPECIFIED IN SAME RUN

Cause: Both a SORT and a MERGE control statement were included. Only one is acceptable.

Action: Delete the erroneous statement from the control statements. See message 7D90A.

7D14I NO SEQUENCE VALUE GIVEN FOR CF xx.

Cause: No sequence (ascending or descending) was specified in the SORT or MERGE control statement for one or more control data fields.

Action: Specify a collating sequence for the indicated control data field in the SORT or MERGE control statement. See message 7D90A.

7D15I MORE THAN 12 CONTROL FIELDS SPECIFIED

Cause: The maximum number of control fields to be used in sorting or merging is 12.

Action: Correct the control data fields in the SORT or MERGE control statement. See message 7D90A.

7D16I DATA FORMAT ENTRY NOT SPECIFIED

Cause: The FORMAT field definer was not specified in either a SORT or MERGE control statement.

Action: Correct the SORT or MERGE control statement by including the FORMAT entry. See message 7D90A.

7D17I NO MAJOR CONTROL FIELD WAS GIVEN

Cause: Control field 1 specifications were not recognized by the program because the FIELDS field definer was not included in a SORT or MERGE control statement.

Action: Correct the SORT or MERGE control statement by including a FIELDS entry (with control field specifications). See message 7D90A.

7D19I FIXED BLOCKING SPECIFIED FOR VARIABLE LENGTH RECORDS

Cause: Variable-length records on input must be specified as being in variable-length blocks.

Action: Correct the BLKSIZE fields definer complement in the INPFIL control statement. See message 7D90A.

7D20I CONTROL FIELD xx EXTENDS BEYOND END OF RECORD

Cause: A control data field identified by xx was specified beyond the last valid byte of the logical record.

Action: Correct the field definer complement of the FIEIDS entry in the SORT or MERGE control statement. See message 7D90A.

7D21I TOTAI LENGTH OF CONTROL FIELDS EXCEEDS 256

Cause: The maximum total length of all control data fields is 256 bytes.

Action: Redefine the lengths of the control fields in the SORT or MERGE control statement. See message 7D90A.

7D22I CONTROL FIELD xx GREATER THAN MAXIMUM ALIOWED

Cause: The control data field identified by xx exceeds: 16 bytes for a decimal field; 4 or 8 bytes for a normalized floating-point number.

Action: Correct the invalid length of control data field in the SORT or MERGE control statement. See message 7D90A.

7D23I I4 MUST BE LESS THAN [L1,L5]

Cause: During sort run for variable-length records, the minimum input record length must be less than the maximum or average input record length.

Action: Correct either L4, I5, or L1 in the RECORD control statement. See message 7D90A.

7D24I STORAGE SPECIFIED GREATER THAN ACTUAL MACHINE SIZE

Cause: The value specified in the STORAGE entry is greater than the machine size specified at IPI time.

Action: Correct or omit the STORAGE value in the OPTION control statement. See message 7D90A.

7D25I [I3, L1] MORE THAN xxxx BYTES

Cause: The input or output record length exceeds the maximum length acceptable to the sort/merge program.

Action: Correct the L1 or L3 entry in the RECORD control statement. See message 7D90A.

7D26I KEYLEN ENTRY INVALID

Cause: The KEYLEN field definer can only be specified for fixed-length, unblocked records (disk input only).

Action: Correct the OPTION control statement by deleting the KEYLEN entry. See message 7D90A.

7D28I RECORD TYPE NOT SPECIFIED

Cause: The type field definer used to indicate fixed or variable length records was not specified.

Action: Correct the RECORD control statement by including the TYPE field definer and associated value. See message 7D90A.

7D29I FILES ENTRY NOT SPECIFIED FOR MERGE

Cause: The number of files to be merged was not specified. The FILES entry is mandatory for a merge only operation.

Action: Correct the MERGE control statement by including the FILES entry. A maximum of four files can be merged. See message 7D90A.

7D30I SIZE ENTRY OMITTED IN SORT STATEMENT

Cause: The SIZE field definer is a mandatory entry that is used to reflect an exact size or an estimate of the number of records to be sorted.

Action: Include the SIZE field definer and associated value in the SORT control statement. See message 7D90A.

7D32I USER PROGRAM ORIGIN GREATER THAN STORAGE SIZE

Cause: The main storage load point or origin address for a user program was specified as being beyond the boundaries of the storage size. All user programs must be loaded below the storage size indicated either at IPL time or in the STORAGE entry.

Action: Either correct the ADDRESS value in the MODS statement or change the STORAGE entry (if specified) in the OPTION statement. See message 7D90A.

7D33I [I5, L1] IS GREATER THAN

Cause: For a sort run for variable-length records, L5 was specified greater than L1. I5 must be specified as either the average logical record length or as a value between the average and the maximum (L1).

Action: Correct either the I5 value or the L1 value in the RECORD control statement. See message 7D90A.

7D34I [E32, E43] NOT SPECIFIED WHEN L3 [MORE, LESS] THAN I1

Cause: If L3 > L1, either Exit 32 or Exit 43 must be included to lengthen records in phase 3 or 4. If L3 is less than L1 and variable-length records were specified, Exit 32 or Exit 43 must be used to update the record length field of each truncated record.

Action: Either correct the L1 or L3 value in the record statement, or include the appropriate exit (E32 or E43) in the MODS statement. See message 7D90A.

7D35I EXIT [31, 44] NOT SPECIFIED FOR NONSTANDARD LABELS

Cause: When nonstandard output tape labels are specified to the sort/merge program, the user must use Exit 31 or 42 to create and write the labels.

Action: Either include the appropriate exit (E31 or E44) in the MODS statement or correct the output label designation in the LABEL entry of the OPTION statement. See message 7D90A.

7D36I USER GIVEN FILE SIZE EXCEEDS MAXIMUM

Cause: The specified sort work area allocated in the FILEW extent cards is not large enough to process the file size specified in the SIZE entry of the SORT control statement.

Action: Either increase the limits specified in the work area extent cards or reduce the file size value associated with the SIZE entry. See message 7D90A.

7D37I INPUT BLOCKSIZE NOT A MULTIPLE OF L1

Cause: The number of bytes in an input block for fixed-length records must be a multiple of the number of bytes in each input record.

Action: Correct either the BLKSIZE entry in the INPFIL statement or the L1 value in the RECORD statement. See message 7D90A.

7D38I OUTPUT BLOCKSIZE NOT A MULTIPLE OF L3

Cause: The number of bytes in an output block for fixed-length records must be a multiple of the number of bytes in each output record.

Action: Correct either the BLKSIZE entry in the OUTFIL statement or the L3 value in the RECORD statement. See message 7D90A.

7D39I A CF STARTS PRIOR TO BYTE 5 IN VARIABLE-LENGTH RECORDS

Cause: The first four bytes of a variable-length record are the record-length field and must not be used as a control data field.

Action: Correct the FIELDS definer complement in the SORT or MERGE control statement. See message 7D90A.

7D40I CONTROL FIELDS OVERLAP FOR OTHER THAN BI FORMAT

Cause: Overlapping control data fields are valid only with the unsigned binary data format.

Action: Correct the FIELDS definer complement of the SORT or MERGE control statement. See message 7D90A.

7D41I RECORD LENGTH NOT SPECIFIED

Cause: The field definer LENGTH or the value (I1) was not specified.

Action: Correct the error in the RECORD control statement. See message 7D90A.

7D42I BLOCKSIZE GREATER THAN xxxx

Cause: The input or output block length specified is greater than the maximum acceptable to the program.

Action: Correct the BLKSIZE entry in the INPFIL or OUTFIL control statement. See message 7D90A.

7D43I NOTPMK ENTRY SPECIFIED WITH STANDARD OUTPUT LABELS

Cause: The NOTPMK entry is valid for unlabeled tape output files only or tape output files with nonstandard labels.

Action: Correct the invalid entry and restart the job.

7D44I PHASE [1, 3, 4] MODIFICATION PROGRAM TOO LARGE

Cause: The size of the user program (determined by the ADDRESS value in the MODS statement) is such that it forces the sort block size below the required minimum.

Action: Either correct the ADDRESS entry in the MODS control statement, or specify a higher main storage load point to the Linkage Editor and re-catalog the user program. See message 7D90A.

7D45I NO MEDIUM SPECIFIED FOR [INPUT, OUTPUT]

Cause: The type of input or output medium (tape or disk) was omitted from the INFIL or OUTFIL control statement.

Action: Correct the INPUT or OUTPUT operand entry in the appropriate control statement. See message 7D90A.

7D47I [TAPE, DISK] OPTIONS SPECIFIED FOR [DISK INPUT, TAPE OUTPUT]

Cause: Tape options such as OPEN, CLOSE can only be specified for tape files. Disk options such as KEYLEN and VERIFY pertain only to disk files.

Action: Correct the erroneous control statements. See message 7D90A.

7D49I NO BLOCKSIZE GIVEN FOR [INPUT, OUTPUT]

Cause: The operand definer BLKSIZE has been either incorrectly specified or omitted.

Action: Correct or include the BLKSIZE entry in the INFIL or OUTFIL control statement. See message 7D90A.

7D50I INSUFFICIENT TRACKS GIVEN FOR MERGE

Cause: A minimum of 2 contiguous disk tracks must be allocated for a work area for a merge-only operation.

Action: Correct the FILEW extent card by increasing the limit of the work area. See message 7D90A.

7D51I ADDROUT OPTION SPECIFIED FOR MERGE

Cause: The ADDROUT option cannot be specified for a merge-only operation.

Action: Delete the ADDROUT entry from the OPTION statement or,

Determine if the operation is to be a sort run. See message 7D90A.

7D53D INVALID RESTART

Cause: A restart sort run has been specified, but the original sort was interrupted prior to the end of phase 1.

Action: Type IGNORE to continue processing (entire sort is rerun), or

Type CANCEL to terminate the job.

Default: Processing continues.

7D55A INVAIID RESTART. CHECK DISK PACK PLACEMENT

Cause: The disk pack(s) that contains the sort work area was not placed on a drive assigned to the identical symbolic unit used in initial run, or

The sort data was destroyed after the original job.

Action: Check and correct the disk pack placement(s) and type IGNORE to continue processing, or

Type CANCEL to terminate the job.

Default: Job canceled.

7D64I DUPLICATE STATEMENT DETECTED-xxxxxx

Cause: Two control statements contain identical statement definers. The statement definer is indicated by xxxxxx.

Action: Delete the invalid control statement from the sort merge control statement deck. See message 7D90A.

7D67I INVALID LABELS SPECIFIED FOR A DISK FILE

Cause: Disk input or output was specified, and the labels associated with the file(s) are not specified as standard. All disk files must contain standard file labels.

Action: Correct the erroneous value associated with the LABEL entry in the OPTION statement, or

Correct the INPUT or OUTPUT entry in the INPFIL or OUTFIL control statement. See message 7D90A.

7D68I [INPUT, OUTPUT] BLOCKSIZE INVALID FOR VARIABLE LENGTH RECORDS

Cause: The input or output blocksize specified is less than the maximum input record length plus four bytes. The input or output blocksize must be equal to or greater than L1+4.

Action: Correct the BLKSIZE entry in the INPFIL or OUTFIL statement, or

Correct the L1 value in the RECORD statement.

7D69I SORT BLOCKSIZE MUST BE AT LEAST 300 BYTES

Cause: The size (total number of bytes) of a user program in phase 1 or phase 3 has forced the assignment phase to compute a sort blocksize that is less than 300 bytes.

Action: Correct the appropriate ADD value in the MODS control statement, or

Reduce the size of the user routine and recatalog it via the Linkage Editor. See message 7D90A.

7D70I INPUT OR OUTPUT BLOCKSIZE IS INVALID

Cause: The input or output blocksize specified for a merge-only run exceeds the maximum size allowed.

Action: Correct the BLKSIZE entry in the INPFIL or OUTFIL control statement. See message 7D90A.

7D71I ASSUMING BLOCKSIZE IN IS xxxx, BLOCKSIZE OUT MAY NOT EXCEED xxxx

Cause: If the input blocksize is specified correctly, the output blocksize exceeds the maximum allowed for a merge-only operation.

Action: If the input blocksize is accurate, correct the BLKSIZE definer in the OUTFIL statement; otherwise,

Correct the BLKSIZE entry in the INPFIL control statement. See message 7D90A.

7D72I EXIT [11, 31, 41, 44] SPECIFIED FOR UNLABELED FILES

Cause: Exits 11, 31, 41, and 44 cannot be specified for unlabeled tape files. However, for a merge-only run, Exit 41 is valid if mixed labels are specified (at least one input file must contain standard user labels or non-standard labels).

Action: Correct the MODS statement by deleting parameters pertaining to the indicated exit, or

Correct the LABEL entry in the OPTION control statement. See message 7D90A.

7D73I L1 INVALID

Cause: The input record length exceeds the maximum acceptable to the program.

Action: Correct the L1 value in the RECORD control statement. See message 7D90A.

7D74I BLOCKSIZE INVALID

Cause: The input or output blocksize exceeds the maximum allowed for a merge-only operation.

Action: Correct the BLKSIZE entry in the INPFIL or OUTFIL control statement. See message 7D90A.

7D75I ONLY xx TRACKS SPECIFIED ON LAST XTENT FOR SORT

Cause: The last extent pertaining to the sort work area contains less than four disk tracks.

Action: Correct the last FILEW extent card (card with the highest sequence number) by allocation at least four disk tracks. See message 7D90A.

7D76I STORAGE LESS THAN 16,384

Cause: The STORAGE entry in the OPTION control statement contains a value less than 16,384.

Action: Either correct the STORAGE entry, or delete it from the OPTION control statement. See message 7D90A.

7D77I FILES VALUE GREATER THAN [4, 9]

Cause: A maximum of 9 files can be sorted and a maximum of 4 files can be merged.

Action: Correct the operand definer complement associated with the FILES entry in the SORT or MERGE control statement. See message 7D90A.

7D78I MORE INPUT OR LABEL ENTRIES THAN FILES SPECIFIED

Cause: This diagnostic can only occur during a merge-only run when mixed input and/or mixed labels are specified. The input type and label entries must agree with the number of files to be merged. For example, if 3 files are to be merged, the INPUT operand definer must reflect 3 input media (if input is mixed).

Action: Correct the INPUT operand definer complements in the INPFIL statement and/or the input label values associated with the LABEL entry in the OPTION statement. See message 7D90A.

7D79I BLOCKSIZE FOR TAPE INPUT OR OUTPUT IS LESS THAN 12

Cause: The minimum input and output blocksize for tape operations is 12 bytes.

Action: Either correct the BLKSIZE entry in the INPFIL or OUTFIL control statements or reblock the input file(s). See message 7D90A.

7D80I END OF SORT ASSIGNMENT PHASE CALCAREA RUN

Cause: The CALCAREA option was requested in the OPTION control statement, and the assignment phase has successfully performed the function. The results are listed on SYSLST.

7D81I EXIT 13 SPECIFIED FOR DISK INPUT

Cause: Exit 13 can be specified in a sort operation only when tape input is specified.

Action: Either delete the E13 entry from the MODS statement, or correct the INPUT entry in the INPFIL control statement. See message 7D90A.

7D82I ADDROUT OPTION SPECIFIED WITH TAPE INPUT

Cause: The ADDROUT option can be specified for a sort run only when disk input is specified.

Action: Either delete the ADDROUT operand definer from the OPTION statement, or correct the INPUT entry in the INPFIL statement. See message 7D90A.

7D83A INVALID RESPONSE

Cause: An invalid response to message 7D53D, 7D55A, or 7D90A was given by the operator.

Action: Enter a valid response. Type either RETRY, IGNORE, or CANCEL.

7D84I TAPE DEVICE ADDRESSES MUST BE ASSIGNED TO [SYSxxx, SYSnnn]

Cause: For a sort operation, all tape input files must reside on SYS002-SYS010, depending upon the number of files to be sorted. For a merge-only operation, tape FILEA must be on SYS002, tape FILEB must be on SYS003, etc. For tape output, SYS001 must be the output unit. The listed symbolic units are not assigned tape drive addresses.

Action: Assign tape devices to the listed units, or

Correct the INPUT or OUTPUT entry in the INPFIL or OUTFIL control statement. See message 7D90A.

7D85I ALL TAPE FILES MUST HAVE UNIQUE DEVICE ADDRESSES

Cause: This message can occur only during a merge-only run. At least 2 tape files (input and output) reside on symbolic units with an identical device address. For tape input and/or output, all tape files must reside on different tape drives. For example, in a 2-way tape merge, FILEA must reside on SYS002, FILEB must reside on SYS003, and SYS002 and SYS003 must be assigned to different tape device addresses. If tape output is specified, SYS001 must be a tape device other than SYS002 and SYS003.

Action: Check and correct all erroneous symbolic units pertaining to tape files, or

Correct the INPUT or OUTPUT entry in the INPFIL or OUTFIL control statement. See message 7D90A.

7D90A OPERATOR-ATTEMPT TO CORRECT ABOVE LISTED ERRORS

Cause: This message occurs at the end of the assignment phase when errors have been detected and both SYSRDR and SYSIPT are card readers. It applies to all assignment phase diagnostic messages except 7D05A, 7D53D, 7D55A, 7D80I, 7D83A, and 7D92I. This facility is provided to enable the sort/merge program to be executed when it is only a job step within a specific job application. If the errors can be corrected immediately the operator should do so.

Action: Type CANCEL if the errors cannot be corrected at this time, or

Correct all control statement errors, and

Place all job control statements and sort/merge control statements pertaining to the sort/merge program in SYSRDR and SYSIPT, respectively. Ensure that the card reader(s) is ready, and type RETRY.

Assignment phase will issue the EOJ macro, thus informing Job Control to initiate the calling of the next job step. In this case, next job step will be the sort/merge run.

Default: Job canceled.

7D91I END OF ASSIGNMENT PHASE

Cause: Self explanatory.

7D92I END OF ASSIGNMENT PHASE-ERRORS DETECTED, CORRECT AND RERUN

Cause: Errors were detected and listed by assignment phase. SYSRDR and/or SYSLST are not card readers or SYSLOG is not a 1052.

Action: The job is canceled. Correct existing errors and rerun the job.

7DA1I WLR - FILEx

Cause: Phase 1 has detected a wrong-length record (block) during a read operation. x indicates the file from which the wrong length record was read. This message can occur either when the records in the input file are not the same length as those specified in L1 value of the RECORD statement or when the input BLKSIZE entry was specified incorrectly.

The wrong-length record is bypassed and processing continues. If this message continues to reappear, the job should be terminated. If the L1 value or the BLKSIZE value is incorrect, correct the error and rerun the job.

7DA2I PHASE 1 UNREADABLE BLOCKS BYPASSED xxxx

Cause: This message is printed at the end of phase 1 when tape input and either the BYPASS option or Exit 13 (E13) is specified. The message reflects the number of input blocks bypassed by the sort.

Processing continues. If the number of blocks bypassed is unacceptable (too many have been bypassed), the sort run should by terminated and rerun.

7DA3I WORK AREA TOO SMALL FOR ACTUAL FILE

Cause: The work area specified in the FILEW extent card(s) is not large enough to process the number of records contained in the input file(s). The actual number of records in the input file(s) is enumerated in message 7DA4I.

The job is terminated after message 7DA6I is printed. Correct the FILEW extent card(s) by expanding the limits so that they can contain the actual file size. Rerun the job.

7DA4I RECORDS PROCESSED xxxxxxx

Cause: This message indicates the number of records processed (sorted internally) by phase 1. It is the actual number of records contained in the input file(s).

Processing continues unless message 7DA3I has preceded this message.

7DA5I MERGE PASSES xx

Cause: xx represents the number of merge passes to be performed by phases 2 and 3.

7DA6I END PHASE 1

Cause: Self explanatory. Processing continues. The sort can be interrupted and restarted anytime after the appearance of this message.

7DB1I PHASE 2, PASS xx

Cause: This message appears at the beginning of each phase 2 pass. xx represents the number of the pass phase 2 is entering.

7DC1I PHASE 3, PASS xx

Cause: This message indicates the pass number as phase 3 is entered.

7DC2D SEQ. ERROR

Cause: A sequence error has been detected during the merging process in phase 3.

Action: Type IGNORE to allow processing to continue. When the end-of-job is reached, the output file should be specified as an input file, and a new sort run should be initiated, or

Type CANCEL to terminate the job.

Default: Job canceled.

7DC2A INVALID RESPONSE

Cause: An invalid response was issued in reply to message 7DC2D.

Action: Type IGNORE or CANCEL, depending upon the original decision.

Default: None.

7DC4I RECORDS PROCESSED xxxxxxx

Cause: This message indicates the number of records sorted and agrees with the number of records processed during phase 1. It does not reflect any user insertions or deletions.

7DC5I END OF SORT

Cause: Normal end-of-job.

7DD1I WLR FILEx

Cause: Phase 4 has read a wrong-length record. x represents the file from which the wrong-length record was read. (See message 7DA1I for further explanation.)

7DD2A INVALID RESPONSE

Cause: An invalid reply was issued to message 7DD2D.

Action: Type IGNORE or CANCEL, depending on the original message.

Default: None.

7DD2D SEQ. ERROR FILEx

Cause: A sequence error is detected in phase 4. x identifies the file with the sequence error. This message can occur either because the file was not presequenced or the control data information was incorrectly specified in the MERGE control statement.

Action: Type IGNORE to allow processing to continue, or

Type CANCEL to terminate the job.

Default: Processing continues.

7DD4I PHASE 4 UNREADABLE BLOCKS BYPASSED xxxxx

Cause: This message indicates number of input blocks bypassed during phase 4 when either the BYPASS option or Exit 45 (E45) has been specified.

Rerun the job if the number of blocks bypassed is unacceptable.

7DD5I RECORDS PROCESSED xxxxxxxx

Cause: This message reflects the number of records merged during phase 4. The count does not reflect any user insertions or deletions.

7DD6I END OF MERGE

Cause: Normal end-of-job.

7T02I EXCESS NO CTL CARDS

Cause: More than 25 control cards were read. The system cancels the job.

7T03I NO END CARD

Cause: END card is missing. The system cancels the job.

7T0AD **CORRECT CONTROL CARDS AND RESTART** RESPOND-RETRY OR CANCEL

Cause: An error in control cards was detected. This message appears only when SYSIPT is assigned to a card reader.

Action: Type RETRY to continue processing. (All sort control cards must be reread.) Or,

Type CANCEL to terminate job.

Default: None.

7T10I WLR

Cause: Wrong-length records were encountered and bypassed by Phase 1 of the Sort program. If the last block of an input reel is a short block, this message is printed, but the records will be processed.

7T11I -REC PROC. xxxxxxx

Cause: xxxxxxx indicates the number of records processed during Phase 1 of the Sort program.

7T12I -LEVELS P2 xxx

Cause: xxx indicates the number of levels that occurred in the program. A level is that point in the program where an input tape is depleted and becomes the output tape, and old output tape becomes one of the input tapes.

7T13I -P1 IP BLOCKS BYPASSED xxx

Cause: xxx indicates number of unreadable blocks bypassed (one or more).

7T14I -END OF INTERNAL SORT

Cause: Self explanatory.

7T15D -N MAX EXCEEDED BY xxxxxx

Cause: Maximum number of records to be sorted exceeded by xxxxxx.

Action: Type 2 to continue sort job, or

Type any other character to terminate job.

Default: None.

7T16I EOF ON OUTPUT SYS00n

Cause: EOF occurred on a work drive in Phase 1 when output tapes were written. Maximum file size was exceeded, or work tapes are not full reels (2400') of tape.

Job is automatically terminated. Split the file into two or more files that do not exceed the maximum file size. Sort as separate files.

7T17I -UNREADABLE BLOCK

Cause: Sort program was unable to read a block of records.

Depending on the content of a sort control statement, block can be bypassed, or job can be terminated.

7T18I -REC DELETED xxxxxxxx

Cause: xxxxxxxx indicates the number of records deleted by the user in Phase 1 of the sort.

7T19I -VL BK

Cause: Last wrong-length record was a valid block.

7T21I None

Cause: Wrong-length record was read. The system cancels the job.

7T22I None

Cause: EOF occurred on a work drive in Phase 2 when output tapes were written. Maximum file size was exceeded, or work tapes not full reels (2400') of tape. Reflective marker was encountered while writing in Phase 2, not last level.

Job automatically terminated. Split the file into 2 or more files that do not exceed the maximum file size. Sort as separate files.

7T23I None

Cause: A tapemark was sensed while reading backwards. The system cancels the job.

7T24I LEVER xxxx CHKPT ON SYS00n

Cause: Checkpoint record xxxx was written on SYS00n. xxxx begins with 0001 and is updated on each level.

7T25I LAST LEVEL CHKPT ON SYS00n

Cause: Last checkpoint record written on SYS00n.

7T26I SEQUENCE ERROR

Cause: Sequence error in last level. The system cancels the job.

7T27I RECORDS IN PHASE 2 Xxxxxxx

Cause: xxxxxxx indicates the number of records.

7T28I RECORD COUNT UNEQUAL

Cause: This message occurs if the record count is unequal or if the user inserts records using Exit 23.

7T29I END OF SORT

Cause: Normal end-of-job.

7T30I None

Cause: Wrong-length record was encountered and bypassed by Merge program.

7T31I NO RSTRT TO 7T24I

Cause: Checkpoint and alternate work tape options were specified and writing onto alternate work tape has begun. (At this point, input from alternate work tape for this level is no longer available.)

Checkpoint restart cannot be accomplished until next level message (7T24I) is printed.

7T32A SEQUENCE ERROR

Cause: A sequence error was detected on the input tape. Registers 4 and 5 contain the beginning address of the records being sequence checked.

Action: Type 5 to continue merge job, or

Type any other character to terminate job.

Default: None.

7T33I RECORDS PROCESSED xxxxxxx UNREADABLE BLOCKS BYPASSED xxxx END OF MERGE

Cause: xxxxxxx indicates the number of records. xxxx indicates the number of unreadable blocks bypassed (one or more). The merge is completed.

7T35I TRACK OVERRUN HAS OCCURRED ON DASD

Cause: An overflow condition has occurred because of an invalid format.

8001D IS IT EOF

Cause: Tape input is specified as unlabeled and a tape mark was encountered when data is transferred.

Action: Type Y if end of file, or

Type N if end of volume. (Y and N response must be upper case.)

Default: End of file assumed.

8002A PUNCH CHECK

Cause: A punch check occurred on the card read punch (2520 or 2540).

Action: Run out cards in punch, discard last three or four cards (for the 2520, 1 punched and two blank cards; for the 2540, 2 punched and 2 blank cards). Ready the punch and type any character to continue processing.

Default: Processing continues. The card in error and the following cards are repunched at the point where the punch check occurred.

8003A ALTA OR ALTB PARAMETER SPECIFIED TWICE

Cause: Self-explanatory.

Action: Supply correct control statement on SYSIPT and type 2 to continue processing, or

Type any character other than 2 to terminate job.

Default: Job canceled.

8004I // TPCP RECSIZ=(nnnnnn)

Cause: Supplied control statement is printed.

8005A // TPCP RECSIZ=(FORMAT IS INCORRECT)

Cause: Control statement format is invalid.

Action: Supply correct control statement on SYSIPT and type 2 to continue processing, or

Type any character other than 2 to terminate job.

Default: Job canceled.

8006A RECORD SIZE OR REEL COUNT PARAMETER MISSING

Cause: Self-explanatory.

Action: Supply control statement on SYSIPT with indicated parameter and type 2 to continue processing, or

Type any character other than 2 to terminate job.

Default: Job canceled.

8007A INVALID RECORD SIZE OR REEL COUNT PARAMETER

Cause: Record size is greater than 5 digits, or reel count exceeds 255.

Action: Supply correct control statement on SYSIPT and type 2 to continue processing, or

Type any character other than 2 to terminate job.

Default: Job canceled.

8008A LEADING ZERO IN RECORD SIZE OR RECORD COUNT PARAMETER

Cause: A leading zero is invalid in a control statement parameter.

Action: Supply correct control statement on SYSIPT and type 2 to continue processing, or

Type any character other than 2 to terminate job.

Default: Job canceled.

8009A INVALID CHARACTER IN RECORD SIZE OR REEL COUNT PARAMETER

Cause: A non-numeric character is invalid in the indicated control statement parameter.

Action: Supply correct control statement on SYSIPT and type 2 to continue processing, or

Type any character other than 2 to terminate job.

Default: Job canceled.

8010A PARAMETERS CONTAIN AN INVALID CHARACTER OR SEPARATORS ARE MISSING

Cause: Invalid character present in, or separators missing from, optional parameters.

Action: Supply correct control statement on SYSIPT and type 2 to continue processing, or

Type any character other than 2 to terminate job.

Default: Job canceled.

8011D NO I/O AREA AVAILABLE

Cause: Record size specified exceeds I/O area capacity.

Action: Supply correct control statement on SYSIPT and type 2 to continue processing, or

Type any character other than 2 to terminate job.

Default: Job canceled.

8012A USER EXIT SPECIFIED BUT NONE SUPPLIED

Cause: Self explanatory.

Action: Supply correct control statement on SYSIPT and type 2 to continue processing, or

Type any character other than 2 to terminate job.

Default: Job canceled.

8013A INVALID TPMK DETECTED ON FILE n

Cause: Tapemark encountered on File A or B:

- Labeled files were specified and a tapemark preceded the label, or
- Two tapemarks preceded either the first data record or the trailer label.

Action: Supply correct control statement on SYSIPT and type 2 to continue processing, or

Type any character other than 2 to terminate job.

Default: Job canceled.

8014A VOLUME LABEL MISSING ON FILE n

Cause: Label handling was specified, but a volume label was not found on File A or File B.

Action: Supply correct control statement on SYSIPT and type 2 to continue processing, or

Type any character other than 2 to terminate job.

Default: Job canceled.

8015A HEADER LABEL MISSING ON FILE n

Cause: A specified header label is missing on File A or File B.

Action: Supply correct control statement on SYSIPT and type 2 to continue processing, or

Type any character other than 2 to terminate job.

Default: Job canceled.

8016A TRAILER LABEL MISSING ON FILE n

Cause: Label handling was specified but a trailer label was not found on File A or File B.

Action: Supply correct control statement on SYSIPT and type 2 to continue processing, or

Type any character other than 2 to terminate job.

Default: Job canceled.

8017D EOF ON UNLABELED FILES

Cause: A tapemark was detected on unlabeled file and the reel count is depleted.

Action: Supply control statement on SYSIPT and type 2 to continue processing, or

Type any character other than 2 to terminate job.

Default: Job canceled.

8018D EOF ON FILE A AND NOT ON B

Cause: File A is shorter than File B.

Action: Supply control statement on SYSIPT and type 2 to continue processing, or

Type any character other than 2 to terminate job.

Default: Job canceled.

8019D EOF ON FILE B AND NOT ON A

Cause: File B is shorter than File A.

Action: Supply control statement on SYSIPT and type 2 to continue processing, or

Type any character other than 2 to terminate job.

Default: Job canceled.

8020A CHANGE REEL ON PRIMARY A

Cause: An alternate reel was not assigned to primary A.

Action: Change the reel and type any character to continue processing.

Default: Processing continues.

8021I SWITCHING TO ALTERNATE A

Cause: Primary reel is completed and processing continues with alternate reel.

8022A CHANGE REEL ON PRIMARY B

Cause: An alternate reel was not assigned to primary B.

Action: Change the reel and type any character to continue processing.

Default: Processing continues.

8023I SWITCHING TO ALTERNATE B

Cause: Primary reel is completed and processing continues with alternate reel.

8024D REEL COUNT DEPLETED

Cause: The reel count is depleted on a labeled file and no EOF trailer label was sensed.

Action: Supply control statement on SYSIPT and type 2 to continue processing, or

Type any character other than 2 to terminate job.

Default: Job canceled.

8025A RESTART WAS REQUESTED

Cause: The interrupt key was pressed during execution.

Action: Type a blank to continue processing, or

Supply new control statement on SYSIPT and type 2 to restart, or

Type any character other than blank or 2 to terminate job.

Default: Job canceled.

8026D EOF ON LABELED FILES

Cause: An end of file trailer label has been detected on both files.

Action: Supply control statement on SYSIPT and type 2 to continue processing, or

Type any character other than 2 to terminate job.

Default: Job canceled.

8027A CONTROL CARD MISSING

Cause: TPCP control statement was omitted.

Action: Supply TPCP control statememt on SYSIPT and type 2 to continue processing, or

Type any character other than 2 to terminate the job.

Default: Job canceled.

8050I NOT A STD R0 RECORD

Cause: A non-standard R0 record was encountered on disk input file. The system cancels the job.

8051I NOT A STD R0 RECORD

Cause: A non-standard R0 record was encountered on disk output file. The system cancels the job.

8052D RECORD GREATER THAN I/O AREA

Cause: The size of the record read is greater than the size of the available I/O area.

Action: Type 2 to truncate record and continue processing, or

Type any character other than 2 to cancel the job.

Default: Job canceled.

8053I I/O AREA INSUFFICIENT

Cause: Insufficient I/O area available for the indicated average record size. The system cancels the job.

8054I NO VOL1 LABEL

Cause: No VOL1 label was found while searching for the VTOC address. The system cancels the job.

8055I SYS005 NOT ASSIGNED

Cause: A tape was not assigned to SYS005 as an output unit. The system cancels the job.

8056I IPL SPECIFIED AND NOT FOUND

Cause: No IPL records were found when the option was requested for the copy file. The system cancels the job.

8057I TAPE RECORD GREATER THAN MAX I/O AREA

Cause: The tape record being restored is greater than the maximum I/O area available. The system cancels the job.

8058A INPUT IS OUT OF SEQUENCE

Cause: The card input is out of sequence, or

The tape reel is out of sequence.

Action: Correct card sequence and type 2 to continue processing, or

Mount a new tape and type 2 to continue processing. If an alternate tape is assigned, the new tape must be assigned next. Or

Type any character other than 2 to cancel job.

Default: Job canceled.

8059A READER OUT OF INPUT

Cause: The card reader is out of cards.

Action: Supply additional card input and type 2 to continue processing, or

Type any character other than 2 to cancel job.

Default: Job canceled.

8060I SYS004 NOT ASSIGNED

Cause: A tape was not assigned to SYS004 as an input unit, or

A card reader was not assigned to SYS004.

The system cancels the job.

8061I CONTROL RECORD NOT FOUND

Cause: The first data record read was not a control record. The system cancels the job.

8062I PARTITION TOO SMALL

Cause: The size of the restore partition is less than that required by the copy program. The system cancels the job.

8063I SYS006 NOT ASSIGNED

Cause: A card punch was not assigned to SYS006 The system cancels the job.

8064I ERRORS IN CONTROL CARD

Cause: Errors were detected in the utility modifier card. The system cancels the job.

8065I RESTORE EXTENTS NOT EQUAL TO COPY

Cause: Extents are all used for output file, but records still remain on input file. The system cancels the job.

8066I END OF COPY

Cause: Normal end-of-job indication.

8067I END OF RESTORE

Cause: Normal end-of-job indication.

8068I CHECK POINT BEING TAKEN FOLLOWING CARD NO. xxxxxx

Cause: A checkpoint record is being written on SYS003 following the referenced card.

8070I INCORRECT CONTROL IDENTIFIER

Cause: The control card is not properly identified. The system cancels the job.

8071I INCORRECT [T, E] OPTION

Cause: An entry other than F or V was made for T, or

An invalid entry was made for E.

The system cancels the job.

8072I INCORRECT FORMAT

Cause: In correct parameter separation was used, or

The parameter was punched incorrectly.

The system cancels the job.

8073I INVALID LEADING ZERO IN SIZE PARAMETER

Cause: Preceding zeros in A=[a] are invalid.

Action: Job canceled.

Default: Job canceled.

8074I INCORRECT CHARACTER IN SIZE PARAMETER

Cause: Only numeric parameters are acceptable in the A=[a] parameter.

Action: Job canceled.

Default: Job canceled.

8075I A PARAMETER TOO LARGE

Cause: The A=[a] entry exceeds the maximum value for the device. The system cancels the job.

8076I INCORRECT PARAMETER

Cause: A character, other than the first, in a parameter is in error. The system cancels the job.

8077I DUPLICATE [A, I, T, E] PARAMETER

Cause: A second entry in the card began with one of the letters of an entry already processed. The system cancels the job.

8079I SIZE PARAMETER MISSING or [A, T] PARAMETER MISSING

Cause: The (a) within the required A=[a] parameter was not specified, or

The required parameter was not specified.

The system cancels the job.

8081I IPL OPTION INVALID FOR COPY VOLUME FUNCTION

Cause: The IPL records are copies for the copy volume function and the parameter is treated as invalid. The system cancels the job.

8101I SYS000 NOT ASSIGNED TO A 2311 OR 2314

Cause: A disk was not assigned to SYS000. The system cancels the job.

8102I UTILITY MODIFIER CARD

Cause: The control card parameters are listed following this message.

8103I INVALID CARD

Cause: The utility modifier statement was improperly identified. The system cancels the job.

8104I INVALID FORMAT

Cause: A parameter is either missing or out of sequence. The system cancels the job.

8105I INVALID PARAMETER

Cause: The parameter value is incorrect. The system cancels the job.

8107I CYLxx, TRKxx IS A DEFECTIVE ALTERNATE TRACK

Cause: The alternate track is defective and will not be assigned.

8108I CYLxx, TRKxx IS DEFECTIVE AND AN ALTERNATE IS ASSIGNED

Cause: The main area of the track is defective and an alternate is assigned.

8109I CYLxx, TRKxx IS DEFECTIVE AND NO ALTERNATE IS AVAILABLE

Cause: The track is defective and no more alternates are available. The system cancels the job.

8110I CYLxx, TRKxx, HA or REC0 IS IN ERROR

Cause: The portion of the track where HA or Record 0 is written is defective. The system cancels the job.

8111A VTOC CARD MISSING

Cause: VTOC card is missing or incorrect.

Action: Correct the card, place in reader, and ready the reader. Type 2 to continue processing, or

Type any character other than 2 to cancel job.

Default: Job canceled.

8112A VTOC ADDRESS INVALID

Cause: Start address is invalid, or

Extent parameter is invalid or missing.

Action: Correct the card, place in reader, and ready the reader. Type 2 to continue processing, or

Type any character other than 2 to cancel job.

Default: Job canceled.

8113A VTOC OVERFLOWS CYLINDER

Cause: Assigned VTOC area overflows the cylinder.

Action: Correct the card, place in reader, and ready the reader. Type 2 to continue processing, or

Type any character other than 2 to cancel job.

Default: Job canceled.

8114A VOL CARD MISSING

Cause: VOL1 card is missing, incorrect, or out of sequence.

Action: Correct the card, place in card reader, and ready the reader. Type 2 to continue processing, or

Type any character other than 2 to cancel job.

Default: Job canceled.

8115A VOL1 SERIAL FIELD

Cause: VOL1 card has blanks in the volume serial field.

Action: Correct the card, place in card reader, and ready the reader. Type 2 to continue processing, or

Type any character other than 2 to cancel job.

Default: Job canceled.

8116A VTOC OR END CARD ERROR

Cause: A VTOC or END card is incorrect or an END card is missing.

Action: Correct the card, place in card reader, and ready the reader. Type 2 to continue processing, or

Type any character other than 2 to cancel job.

Default: Job canceled.

8117A PARAMETER DELIMITER

Cause: A comma is missing after a parameter.

Action: Correct the card, place in card reader, and ready the reader. Type 2 to continue processing, or

Type any character other than 2 to cancel job.

Default: Job canceled.

8118D UNEXPIRED FILE

Cause: An unexpired file was detected.

Action: Reply 2 to continue the job and to delete this or any other unexpired file, or

Reply any character other than 2 to cancel the job.

Default: Job canceled.

8120I END OF INIT DISK

Cause: Normal end of initialize disk program.

8121I UNRECOVERABLE DISK ERROR

Cause: An unrecoverable disk error occurred while performing surface analysis. The system cancels the job.

8122I LABEL CONTROL SET

Cause: The label control cards are printed after this message.

8201I SYS000 NOT A VALID DISK DRIVE

Cause: A disk was not assigned to SYS000. The system cancels the job.

8203I INVALID CARD

Cause: The utility modifier statement is improperly identified. The system cancels the job.

8205I INVALID FORMAT

Cause: A parameter is missing or out of sequence. The system cancels the job.

8206I INVALID PARAMETER

Cause: A parameter value is incorrect. The system cancels the job.

8207I UTILITY MODIFIER CARD

Cause: The control card parameters are listed following this message.

8210I FORMAT 4 LABEL MISSING

Cause: No Format 4 label can be found. The system cancels the job.

8211I VOLUME LABEL MISSING

Cause: No volume label can be found. The system cancels the job.

8212I DATA CHECK IN LABEL

Cause: A data check occurred in the count field while reading a label. The system cancels the job.

8213D FORMAT 4 LABEL ERROR

Cause: An error occurred while reading a Format 4 label.

Action: Type a 2 to continue processing, or

Type any character other than 2 to cancel job.

Default: Job canceled.

8214D VOLUME LABEL ERROR

Cause: An error occurred while reading a volume label.

Action: Type a 2 to continue processing, or

Type any character other than 2 to cancel job.

Default: Job canceled.

8215I ALT CYLS FULL

Cause: No more alternate tracks are available for assignment. The system cancels the job.

8216I CYLxx, TRKxx REC0 IN ERROR

Cause: The portion of the track on which record 0 is written is defective. The system cancels the job.

8220I ccccchhhhrrkkdddd

Cause: If there are no errors, the eight byte count field is printed in hexadecimal as each record is transferred.

C=cylinder
h=head
r=record
k=key
d=data

8221I ALT TRK ASSIGNED NOT ACCESSIBLE

Cause: The HA and R0 area designated is defective. The alternate track is not accessible for the valid data. The system cancels the job.

8222I HA AND R0 ARE DEFECTIVE

Cause: The HA and R0 areas are defective. An alternate track was not previously assigned, and therefore all the records will be printed on SYSLST regardless of print option.

8223I ALT TRK PREVIOUSLY ASSIGNED

Cause: The HA and R0 areas designated are not defective. An alternate track was previously assigned; therefore, data will be transferred to a new alternate track.

8224I HA AND R0 OF ALT TRK IS DEFECTIVE

Cause: The HA and R0 area of the previously assigned alternate track is defective. The data portion of R0 will not be transferred, but other records may be recovered.

8225I DATA CHECK IN COUNT FIELD

Cause: A data check has occurred in the count field. The record is not transferred to the alternate track.

8226I NO ADDRESS MARKER

Cause: An address marker is missing. The record is not transferred to the alternate track.

8227I KEY AND DATA ERROR RECOVERED

Cause: The key and data portion of this record was recovered, but is possibly in error. The record is formatted as read.

8228I KEY AND DATA ERROR

Cause: The key and data portion of this record cannot be recovered. The record is formatted with EBCDIC [A] fill characters.

8229I KEY MAY BE IN ERROR

Cause: There is a possible error in recovered key. The data field was not recovered. The record is formatted as read with the data field filled with EBCDIC [A] characters.

8230I UNRECOVERABLE ERROR

Cause: An unrecoverable error has occurred, other than missing address marker, data check, or record overflow. The system cancels the job.

8231I CYLxx, TRKxx IS DEFECTIVE, AN ALTERNATE IS ASSIGNED

Cause: The track is permanently defective and an alternate is assigned.

8232I CYLxx, TRKxx IS NOT DEFECTIVE

Cause: The track is acceptable.

8233I CYLxx, TRKxx HA AND R0 ARE DEFECTIVE, NO ALTERNATE ASSIGNED

Cause: The HA and R0 portion of the track is defective. An alternate track cannot be assigned. The system cancels the job.

8234I UNRECOVERABLE DISK ERROR

Cause: An unrecoverable disk error occurred while performing surface analysis. The system cancels the job.

8235I DATA TRANSFERRED TO ORIGINAL DEFECTIVE TRACK

Cause: The track is acceptable, and the data was transferred.

8236I DATA TRANSFERRED TO ORIGINAL TRACK

Cause: The alternate track is acceptable, and data was transferred.

8240I END OF ALT TRK ASSGN

Cause: Normal end-of-job indication.

8502D BLOCK LENGTH EXCEEDS BUFFER SIZE-INTAPE

Cause: Record exceeds I/O area capacity.

Action: Type IGNORE to accept truncated record, or

Type CANCEL or Ⓑ to cancel the job.

Default: Job canceled.

8503D BLOCK LENGTH EXCEEDS BUFFER SIZE-INDISK

Cause: Record exceeds I/O area capacity.

Action: Type IGNORE to accept truncated record, or

Type CANCEL or Ⓑ to cancel the job.

Default: Job canceled.

8506D RECORD LENGTH EXCEEDS BUFFER SIZE-OUTAPE

Cause: Record exceeds I/O area capacity.

Action: Type IGNORE to accept truncated record, or

Type CANCEL or Ⓑ to cancel the job.

Default: Job canceled.

8507D RECORD LENGTH EXCEEDS BUFFER SIZE-OUTDISK

Cause: Record exceeds I/O area capacity.

Action: Type IGNORE to accept truncated record, or

Type CANCEL or Ⓑ to cancel the job.

Default: Job canceled.

8512D INCOMPLETE LOGICAL RECORD IN BLOCK-INTAPE

Cause: The block residue is less than the logical record length.

Action: Type IGNORE to accept the residual data, or

Type CANCEL or Ⓑ to cancel the job.

Default: Job canceled.

8513D INCOMPLETE LOGICAL RECORD IN BLOCK-INDISK

Cause: The block residue is less than the logical record length.

Action: Type IGNORE to accept the residual data, or

Type CANCEL or Ⓑ to cancel the job.

Default: Job canceled.

8515D RECORD LENGTH OVER 80-OUTCARD

Cause: Record exceeds I/O area capacity.

Action: Type IGNORE to accept truncated record, or

Type CANCEL or Ⓑ to cancel the job.

Default: Job canceled.

8516D RECORD LENGTH EXCEEDS BUFFER RESIDUE-OUTAPE

Cause: Buffer residue is less than the logical record length.

Action: Type IGNORE to place logical record in next output block, or

Type CANCEL or Ⓑ to cancel the job.

Default: Job canceled.

8517D RECORD LENGTH EXCEEDS BUFFER RESIDUE-OUTDISK

Cause: Buffer residue is less than the logical record length.

Action: Type IGNORE to place logical record in next output block, or

Type CANCEL or (B) to cancel the job.

Default: Job canceled.

8518D RECORD LENGTH EXCEEDS BUFFER SIZE-OUTPRT

Cause: Record exceeds I/O area capacity.

Action: Type IGNORE to accept truncated record, or

Type CANCEI or (B) to cancel the job.

Default: Job canceled.

8522A TAPE MARK ON UNLABELED FILE-INTAPE

Cause: Self explanatory.

Action: Type EOV to rewind and unload the tape. This message is always followed by message 0P08. Mount another reel to continue processing, or

Type EOF. This implies no further input from this drive, or

Type (B) to ignore the tapemark and continue processing.

Default: Job canceled.

8525D IMPROPER STACKER SELECT CHARACTER-OUTCARD

Cause: First character not V or W.

Action: Type IGNORE to accept as W (stacker 2), or

Type CANCEL or (B) to cancel the job.

Default: Job canceled.

8526I END OF REEL ON UNLABELED FILE-OUTAPE

Cause: Self explanatory.

Action: This message is always followed by message 0P08. Mount another reel to continue processing.

Default: None.

8535A 2540 PUNCH CHECK-OUTCARD

Cause: A punch check occurred on 2540 card read punch.

Action: Type CANCEL to terminate processing, or

Type (B) or RETRY to repunch and continue. For RETRY, run out the cards in the punch and discard the last five cards in stacker 1. Ready the punch.

Default: Job canceled.

8545A 2520 PUNCH CHECK-OUTCARD

Cause: A punch check occurred on 2520 card read punch.

Action: Type CANCEL to terminate processing, or

Type (B) or RETRY to repunch and continue. For RETRY, run out the cards in the punch and discard the last four cards in stacker 1. Ready the punch.

Default: Job canceled.

8555A 2520 PUNCH CHECK-OUTCARD

Cause: A punch check occurred on 2520 card read punch.

Action: Type CANCEL to terminate processing, or

Type (B) or RETRY to repunch and continue. For RETRY, run out cards in the punch and discard the last three cards in stacker 1 and one card in stacker 2. Ready punch.

Default: Job canceled.

8590A INVALID RESPONSE

Cause: Operator response to previous utility-macro message (85xxx) invalid.

Action: Type a valid response.

Default: None.

8V00A INVALID STATEMENT

Cause: Unrecognizable statement read from card reader assigned to SYSIPT.

Action: Supply correct control statement on SYSIPT and type Y to continue processing, or

Type any character except Y to terminate the job.

Default: None.

8V00I INVALID STATEMENT

Cause: Unrecognizable statement read from tape unit assigned to SYSIPT. The system cancels the job.

8V01I INVALID PARAMETER xxxxxx

Cause: Expected numerical field is not numeric. The system cancels the job.

8V02A INVALID TABLE NAME

Cause: Table name in statement read from card reader assigned to SYSIPT has incorrect format.

Action: Supply correct control statement on SYSIPT and type Y to continue processing, or

Type any character except Y to terminate the job.

Default: None.

8V02I INVALID TABLE NAME

Cause: Table name in statement read from tape unit assigned to SYSIPT has incorrect format. The system cancels the job.

8V03A INVALID SPARE TRACK PARAMETER

Cause: Number of spare tracks allocated to a table in a SELECT statement read from card reader (SYSIPT) exceeds 255.

Action: Supply correct control statement on SYSIPT and type Y to continue processing, or

Type any character except Y to terminate the job.

Default: None.

8V03I INVALID SPARE TRACK PARAMETER

Cause: Number of spare tracks allocated to a table in a SELECT statement (read from tape unit assigned to SYSIPT) exceeds 255. The system cancels the job.

8V04I INVALID SEPARATOR

Cause: Incorrect separator used. The system cancels the job.

8V05I INVALID INPUT VOCABULARY PARAMETER

Cause: Input vocabulary parameter in VOC BL statement has incorrect format. The system cancels the job.

8V06I INVALID WORD IDENTIFIER xxxxxx

Cause: Invalid word identifier used. The system cancels the job.

8V07I INVALID WORD IDENTIFIER SEQUENCE xxxxxx

Cause: Invalid word identifier sequence used. The system cancels the job.

8V08A INVALID CONTINUATION CARD

Cause: First 15 columns of a continuation card read from card reader assigned to SYSIPT are not blank.

Action: Provide correct continuation card and type Y to continue processing, or

Type any character except Y to terminate the job.

Default: None.

8V08I INVALID CONTINUATION CARD

Cause: First 15 columns of a continuation card (read from tape unit assigned to SYSIPT) are not blank. The system cancels the job.

8V09A TABLE NOT FOUND

Cause: Table specified in statement read from card reader, assigned to SYSIPT, is not in Operative Vocabulary File.

Action: Provide correct statement and type Y to continue processing, or

Type any character except Y to terminate the job.

Default: None.

8V09I TABLE NOT FOUND

Cause: Table specified in statement read from tape unit assigned to SYSIPT is not in Operative Vocabulary File. The system cancels the job.

8V10A INVALID UPDATE OPERATION

Cause: Attempt to insert a word in the residuum has been made by means of the card reader assigned to SYSIPT.

Action: Provide valid statement and type Y to continue processing, or

Type any character except Y to terminate the job.

Default: None.

8V10I INVALID UPDATE OPERATION

Cause: Attempt to insert a word in the residuum has been made by means of a tape unit assigned to SYSIPT. The system cancels the job.

8V11A INVALID WORD LOCATION

Cause: Word location in MODIFY statement (read from card reader assigned to SYSIPT) is incorrect.

Action: Provide correct statement and type Y to continue processing, or

Type any character except Y to terminate the job.

Default: None.

8V11I INVALID WORD LOCATION

Cause: Word location in MODIFY statement (read from tape unit assigned to SYSIPT) is incorrect. The system cancels the job.

8V12A WORD xxxxxx NOT FOUND

Cause: Word in MODIFY statement (read from card reader assigned to SYSIPT) is not in Input Vocabulary File (SYS004).

Action: Mount correct Input Vocabulary File and type Y to continue processing, or

Type any character except Y to terminate the job.

Default: None.

8V13A INPUT VOCABULARY MISSING ON SYSxxx

Cause: Input vocabulary is not present on card reader assigned to SYSIPT or on tape unit assigned to SYS004.

Action: Provide vocabulary deck or tape and type Y to continue processing, or

Type any character except Y to terminate the job.

Default: None.

8V13I INPUT VOCABULARY MISSING ON SYSIPT

Cause: Input vocabulary is not present on tape unit assigned to SYSIPT. The system cancels the job.

8V14A INVALID VOCABULARY SEQUENCE

Cause: Vocabulary deck has incorrect sequence.

Action: Put vocabulary records in proper sequence and type Y to continue processing, or

Type any character except Y to terminate the job.

Default: None.

8V14I INVALID VOCABULARY SEQUENCE

Cause: Vocabulary on tape unit assigned to SYSIPT has incorrect sequence. The system cancels the job.

8V15D EXCESSIVE WORD LENGTH xxxxxx

Cause: Word exceeds either the available buffer size or the track capacity of the disk storage drive.

Action: Type Y to skip word and continue processing, or

Type any character except Y to terminate the job.

Default: None.

8V16D WORD xxxxxx NOT FOUND

Cause: Word specified by word identifier xxxxxx is not in Input Vocabulary File.

Action: Type Y continue processing, or

Type any character except Y to terminate the job.

Default: None.

8V17I OVERFLOW ON VOCRES

Cause: Insufficient space on disk containing Operative Vocabulary File. The system cancels the job.

8V18I OVERFLOW ON VOCUT

Cause: Insufficient space on disk allocated to utility work file. The system cancels the job.

8V19I TAPE READ ERROR

Cause: Unrecoverable read error. The system cancels the job.

8V20I READ ERROR ON VOCRES

Cause: Unrecoverable read error while reading Operative Vocabulary File. The system cancels the job.

8V21I READ ERROR ON VOCUT

Cause: Unrecoverable read error while reading utility work file. The system cancels the job.

8V22I INVALID VOCRES ASSIGNMENT

Cause: File described as VOCRES is not an Operative Vocabulary File. The system cancels the job.

8V23I INVALID SYSLST ASSIGNMENT

Cause: Device assigned to SYSLST cannot be handled. The system cancels the job.

8V24I INVALID SYSIPT ASSIGNMENT

Cause: Device assigned to SYSIPT cannot be handled. The system cancels the job.

8V25I INVALID OR MISSING UPSI STATEMENT

Cause: Self explanatory. The system cancels the job.

8V26I UPDATE OPERATION REJECTED

Cause: Vocabulary table or residuum cannot be modified because of insufficient space on disk. The system cancels the job.

8V27I TOO MANY EXTENTS FOR VOCRES

Cause: More than one XTENT statement provided for VOCRES. The system cancels the job.

8V28I TOO MANY XTENTS FOR VOCUT

Cause: More than one XTENT statement provided for VOCUT. The system cancels the job.

8V29I MAXIMUM WORD LENGTH xxxx

Cause: Self explanatory.

8V30I xxxx WORDS NOT FOUND

Cause: Number of words selected by the user but not contained in the Input Vocabulary File.

8V31I TABLE xxxxxxxx NOT CREATED

Cause: Words to be included in the table are not in the Input Vocabulary File.

8V91I NO FORMAT 4 LABEL FOUND. JOB CANCELLED.

Cause: No Format 4 label was found. The system cancels the job.

8V92I NO VOLUME 1 LABEL FOUND. JOB CANCELLED.

Cause: No volume 1 label found. The system cancels the job.

8V93I INVALID VTOC ADDR FOUND. JOB CANCELLED.

Cause: The VTOC address is invalid. The system cancels the job.

8V94I NO DISK RECORD FOUND. JOB CANCELLED.

Cause: No disk record found. The system cancels the job.

8V95I NOT A VALID LABEL FORMAT

Cause: The label Format is not acceptable at this time.

Messages 9100 through 9170 are printed in the following format:

1. If there is no 12-2-9 code in column 1 of the card image, columns 2-80 of the card image are printed in EBCDIC.

2. If there is a 12-2-9 code in column 1 of the card image:

Print Positions	Contains Card Image Columns
8-15	73-80 (identification) in EBCDIC
17-19	2-4 (card type) in EBCDIC
21-26	6-8 (assembled origin) in hexadecimal
28-31	11-12 (number of bytes in card image) in hexadecimal
33-36	15-16 (ESID number) in hexadecimal

The remainder of the line depends on the type of card image (ESD or non-ESD).

If non-ESD type card image, print positions 38-128 are printed from columns 17-52. These positions are printed in hexadecimal in blocks of 9 words (36 bytes) separated by one block.

If ESD type card image, print positions 28-128 contain 3 fields of ESD information. Each field is 16 columns, as follows:

Columns	Contain
17-24	ESD item name in EBCDIC
25	ESD type in EBCDIC
26-28	Assembled origin in hexadecimal
30-32	Length/ESD number in hexadecimal

The action taken by the system when these messages are issued depends upon the option specified in the Linkage Editor ACTION statement.

If CANCEL is specified as the operand of the ACTION statement, the job is canceled.

If CANCEL is not specified, processing continues.

9100I Content of statement in error.

Cause: Invalid input card type.

9101I Content of statement in error.

Cause: Invalid operation in control statement.

9102I Content of statement in error.

Cause: Non-decimal or non-hexadecimal character in decimal or hexadecimal field.

9110I Content of statement in error.

Cause: Invalid or missing field limiter on control statement.

9111I Content of statement in error.

Cause: An operand field on a user-prepared control statement or REP card is greater than the maximum length.

9112I Content of statement in error.

Cause: An operand field is missing.

9113I Content of statement in error.

Cause: Control statement extends beyond column 71.

9114I Content of statement in error.

Cause: Submodular namelist is too long.

9115I Content of statement in error.

Cause: NOAUTO expected but not found.

9116I Content of statement in error.

Cause: Control statement present between first ESD and END statements of a module.

9120I Content of statement in error.

Cause: Phase name duplicated.

9121I Content of statement in error.

Cause: Phase name lower in sequence than $$A or phase name begins with an *.

9122I Content of statement in error.

Cause: Symbol or phase name designated in origin was not previously defined, or

An F parameter was detected in a phase card. (Autotest will not operate in a foreground environment.)

9123I Content of statement in error.

Cause: Previous phase processed contained no valid storage assignment.

9124I Content of statement in error.

Cause: Phase origin is negative.

9125I Content of statement in error.

Cause: PHASE statement encountered during AUTOLINK.

9130I Content of statement in error.

Cause: Relocatable library not present.

9131I Content of statement in error.

Cause: Module requested by INCLUDE statement not present in relocatable library.

9132I Content of statement in error.

Cause: Too many nesting levels of INCLUDE attempted.

9133I Content of statement in error.

Cause: Nested submodular INCLUDE.

9135I Content of statement in error.

Cause: ACTION statement has invalid operand.

9136I Content of statement in error.

Cause: ACTION MAP specified, but SYSLST was not assigned.

9140I Content of statement in error.

Cause: ESD item of invalid type.

9141I Content of statement in error.

Cause: Duplicated ESID number:

- No END statement in last module, or
- Duplicate or extraneous ESD cards.

9142I Content of statement in error.

Cause: ESD entry point label does not point to ESD named control section or COMMON.

9143I Content of statement in error.

Cause: Invalid duplication of entry point label.

9144I Content of statement in error.

Cause: Invalid ESID number, or

Control dictionary and linkage table overlap.

9145I Content of statement in error.

Cause: Origin of control section not on a doubleword boundary.

9146I Content of statement in error.

Cause: COMMON has the same label as a named control section or an entry point label.

9147I Content of statement in error.

Cause: ESD entry point label does not belong to a defined control section.

9150I Content of statement in error.

Cause: Load address encountered outside phase.

9151I Content of statement in error.

Cause: Invalid delimiter on REP card.

9155I Content of statement in error.

Cause: The TXT or REP card or address constant in an RLD record does not have an ESID pointer to a defined control section.

9156I Content of statement in error.

Cause: Invalid format of RLD card.

9158I Content of statement in error.

Cause: END statement should contain the length of the control section, but does not.

9170I Content of statement in error.

Cause: ESID number not previously processed.

9200I LINKAGE EDITOR CANNOT CONTINUE

Cause: Highest byte of user program would overlay the area reserved for the Autotest control program at user program execution time, or

The user phase to be fetched would be located wholly or partially in the Supervisor area. The system cancels the job.

9201I LINKAGE EDITOR CANNOT CONTINUE

Cause: Required Autotest phase not found in core image library. The system cancels the job.

9202I LINKAGE EDITOR CANNOT CONTINUE

Cause: All of user's core is not allocated to Autotest (the background area). The system cancels the job.

9203I SYM OUT OF ORDER

Cause: Error in symbol out of sequence.) All symbols are ignored.

9281I LINKAGE EDITOR CANNOT CONTINUE

Cause: No valid storage assignment in final phase. The system cancels the job.

9282I LINKAGE EDITOR CANNOT CONTINUE

Cause: No END record encountered before ENTRY statement. The system cancels the job.

9285I LINKAGE EDITOR CANNOT CONTINUE

Cause: An error occurred during the linkage editing of a $ phase. The system cancels the job.

9291I LINKAGE EDITOR CANNOT CONTINUE

Cause: End of file or extents exceeded on SYS001, or

SYS001 not assigned to disk or tape.

The system cancels the job.

9292I LINKAGE EDITOR CANNOT CONTINUE

Cause: End of librarian work area. Too many phases to process. The system cancels the job.

9293I LINKAGE EDITOR CANNOT CONTINUE

Cause: Core image library space exceeded. The system cancels the job.

9294I LINKAGE EDITOR CANNOT CONTINUE

Cause: Disk error--an invalid no-record-found condition occurred. The system cancels the job.

9299I ERROR HAS OCCURRED DURING LINKAGE EDITING

Cause: Printed on SYSLOG if any errors 9100I through 9170I have occurred. These messages appear on SYSLST.

Job continues if ACTION CANCEL option is not specified. Otherwise, job is canceled.

9900I DISK WORK AREA INVALID

Cause: Minimum work area size requirement not met. (In most cases, 30 tracks are required, allocate more if possible.) Or

Work area not assigned to SYSLNK.

The system cancels the job.

9901I DISK WORK AREA TOO SMALL

Cause: Insufficient work area for SYM card input. Processing continues without symbolic capability.

9902I DISK WORK AREA TOO SMALL

Cause: Insufficient work area detected while writing Linkage Editor Control Dictionary onto disk, or

No work area remains for phase fetch/load records and test request output.

The system cancels the job.

9903I DISK WORK AREA TOO SMALL

Cause: Test request control records or patch area records exceed capacity of work area. The system cancels the job.

9A01I AUTOTEST CANNOT CONTINUE

Cause: All user's main storage not allocated to Autotest. A change in core allocation has taken place by means of Job Control before the execution of a // EXEC card. The system cancels the job.

9A02I OPTION CATAL IGNORED

Cause: User supplied OPTION CATAL. Option ignored by Post-Linkage Editor. Processing continues.

9F02I AUTOTEST COMMUNICATION RECORD NOT ON SYSLNK

Cause: The Disaster Continue routine has detected a wrong-length record in the first Autotest record of the Autotest work file (SYSLNK). (The user program has written over Autotest information.) The system cancels the job.

9J01I EOV ON SYS005

Cause: End of volume on SYS005 (output tape) during Card to Tape variable program. The system cancels the job.

A110I ABORT -PERM. I/O ERROR ON SYSxxx

Cause: An unrecoverable error on the named file prevents further processing. If the named file is SYSxxx, the unit code of the DTF that caused the error does not match any valid unit. This is usually the result of an accidental overlap that destroys the DTF. The system cancels the job.

A111I ABORT - UNEXPECTED EOF ON SYSxxx

Cause: EOF has occurred on an assembler work file that does not support multi-volume files. It usually results from a short tape. The system cancels the job.

A112I ABORT- INADEQUATE CORE FOR [32K, 64K] ASSEMBLER

Cause: An attempt was made to execute the 32K assembler in less than 14K, or the 64K assembler in less than 44K. The system cancels the job.

A113I ABORT -INVALID PHYSICAL UNIT SYSxxx

Cause: The unit SYSxxx is an invalid tape or direct access device (2321 is invalid), or

SYSxxx is a 7-track tape with a mode setting other than X'10', X'50', or X'90', or

SYSxxx is a different device type than that for which the assembler was linkage edited. This applies to the 10K variant assembler only.

The system cancels the job.

A114I ABORT-NO UNIT ASSIGNED FOR [SYSxxx, OPTION SYM]

Cause: The file is either unconditionally required (SYS001-SYS003) and assigned UA or IGN, or

The file is required by a stated OPTION and is unassigned. (IGN is a valid assignment for SYSPCH or SYSLST.)

The system cancels the job.

A115I ABORT-INVALID DUAL ASSGN SYSPCH [SYSIPT, SYSLST]

Cause: SYSPCH and SYSIPT are both assigned to the same unit, which is not a 1142N1 or 2520B1 card reader, or

SYSPCH and SYSLST are both assigned to the same unit, which is not a tape.

The system cancels the job.

B001A PAUSE nnnnn

Cause: FORTRAN object program has requested a pause in processing.

Action: Perform requested operation. Type B to continue processing.

Default: Pause will not occur.

B002I STOP nnnnn

Cause: End of FORTRAN object program.

C001I CONFLICTING I/O ASSIGNMENTS

Cause: SYS001, SYS002, SYS003 must be assigned to the same type of device--either tape or disk. The system cancels the job.

C002I STORAGE ALLOCATED TO THE COMPILER IS LESS THAN 14K. COMPILATION CANCELLED

Cause: COBOL cannot be executed if the storage allocated to the background area is less than 14K bytes. The system cancels the job.

<table>
<tr><th>Name</th><th>Operation</th><th>Operand</th><th>72</th><th>Remarks</th></tr>
<tr><td>//</td><td>ASSGN</td><td>SYSxxx,address [{,X'ss'
,ALT}]</td><td>b</td><td>SYSxxx: can be SYSRDR
SYSIPT
SYSIN
SYSPCH
SYSLST
SYSLOG
SYSLNK
SYSOUT
SYSSLB
SYSRLB
SYS000 - SYSmax

address: can be X'cuu', UA, or IGN

X'cuu': c = 0 - 6
uu = 00 - FE (0 - 254) in hex

UA: unassign

IGN: unassign and ignore

X'ss': used for magnetic tape only

<table>
<tr><th>ss</th><th>Bytes per Inch</th><th>Parity</th><th>Translate Feature</th><th>Convert Feature</th></tr>
<tr><td>10</td><td>200</td><td>odd</td><td>off</td><td>on</td></tr>
<tr><td>20</td><td>200</td><td>even</td><td>off</td><td>off</td></tr>
<tr><td>28</td><td>200</td><td>even</td><td>on</td><td>off</td></tr>
<tr><td>30</td><td>200</td><td>odd</td><td>off</td><td>off</td></tr>
<tr><td>38</td><td>200</td><td>odd</td><td>on</td><td>off</td></tr>
<tr><td>50</td><td>556</td><td>odd</td><td>off</td><td>on</td></tr>
<tr><td>60</td><td>556</td><td>even</td><td>off</td><td>off</td></tr>
<tr><td>68</td><td>556</td><td>even</td><td>on</td><td>off</td></tr>
<tr><td>70</td><td>556</td><td>odd</td><td>off</td><td>off</td></tr>
<tr><td>78</td><td>556</td><td>odd</td><td>on</td><td>off</td></tr>
<tr><td>90</td><td>800</td><td>odd</td><td>off</td><td>on</td></tr>
<tr><td>A0</td><td>800</td><td>even</td><td>off</td><td>off</td></tr>
<tr><td>A8</td><td>800</td><td>even</td><td>on</td><td>off</td></tr>
<tr><td>B0</td><td>800</td><td>odd</td><td>off</td><td>off</td></tr>
<tr><td>B8</td><td>800</td><td>odd</td><td>on</td><td>off</td></tr>
<tr><td>C0</td><td>800</td><td colspan="3">single density 9-track tape</td></tr>
<tr><td>C0</td><td>1600</td><td colspan="3">single density 9-track tape</td></tr>
<tr><td>C0</td><td>1600</td><td colspan="3">dual density 9-track tape</td></tr>
<tr><td>C8</td><td>800</td><td colspan="3">dual density 9-track tape</td></tr>
</table>

ALT: specifies alternate unit</td></tr>
<tr><td>//</td><td>CLOSE</td><td>SYSxxx [{,X'cuu' ,X'ss'
,UA
,IGN
,ALT}]</td><td></td><td>SYSxxx: for magnetic tape - SYSPCH
SYSLST
SYSOUT
SYS000 - SYSmax

X'cuu', X'ss', UA, IGN, ALT: values as described in ASSGN command</td></tr>
<tr><td>//</td><td>DATE</td><td>mm/dd/yy
or
dd/mm/yy</td><td>b</td><td>mm: month (01 - 12)
dd: day (01 - 31)
yy: year (00 - 99)</td></tr>
<tr><td>//</td><td>DLAB</td><td>'label fields 1 - 3',
xxxx,yyddd,yyddd,'system code'
[,type]</td><td>C</td><td>'label fields 1 - 3': first three fields of Format 1 DASD file label. Is a 51-byte character string, contained within apostrophes and followed by a comma. Entire 51-byte field must be contained in the first of the two statements. Field 1 is the file name (44-byte alphameric); field 2 is the format identifier (1-byte numeric); field 2 is the format identifier (1-byte numeric); field 3 is the file serial number (6-byte alphameric).

C: any non-blank character in column 72

xxxx: volume sequence number (4-digit numeric). Must begin in column 16 of the continuation statement. Columns 1 - 15 are blank.

yyddd,yyddd: file creation date followed by file expiration date. Each is 5-digit numeric.

'system code': This operand is not used by DOS. A string of 13 characters or blanks must be enclosed within apostrophes as shown.

type: SD, DA, ISC, or ISE. If omitted, SD is assumed.</td></tr>
</table>

• Figure 11. Job Control Statements (Part 1 of 4)

Name	Operation	Operand	72	Remarks
//	DLBL	filename, ['data file ID',] [date information], [codes]	⌀	filename: 1 to 7 characters. The filename corresponding to the DTF table name. data file ID: 1 to 44 characters, within apostrophes. The name associated with the data set. date information: 1 to 6 characters. The retention period of the file or the absolute expiration date. codes: 2 or 3 characters indicating the file type [SD, DA, ISC, ISE].
//	EXEC	[progname]	⌀	progname: 1 to 8 alphameric characters. Used only if the program is in the core image library.
//	EXTENT	[B=bins], [symbolic unit], [serial number], [type], [sequence number], [number of tracks], [relative track], [split cylinder track]		bins: 1 or 2 characters. Not required for SD or ISFMS files. If omitted, bin zero is assumed for both parts. symbolic unit: symbolic unit of the volume in form SYSxxx. serial number: 1 to 6 characters. If omitted, the volume serial number of the preceding extent is used. type: one character indicating file type [1, 2, 4, 8] sequence number: 1 to 3 characters. Not required for SD, DAM, or ISFMS. relative track: 1 to 5 characters. Not required for DA, SD or ISFMS files. number of tracks: 1 to 5 characters. Not required for SD, DAM or ISFMS files. split cylinder tracks: 1 or 2 numeric characters from 0-19. If omitted, extent type 8 is assumed.
//	JOB	jobname	⌀	jobname: 1 to 8 alphameric characters
//	LBLTYP	{TAPE [(nn)] / NSD (nn)}	⌀	TAPE: used when tape files requiring label information are to be processed and no nonsequential disk files are to be processed. nn: optional and is present only for future expansion (it is ignored by Job Control) NSD: nonsequential disk files are to be processed nn: largest number of extents per single file
//	LISTIO	{SYS / PROG / F1 / F2 / ALL / SYSxxx / UNITS / DOWN / UA / X'cuu'}	⌀	Causes listing of I/O assignments on SYSLST
//	MTC	opcode, SYSxxx [,nn]	⌀	opcode: BSF, BSR, ERG, FSF, FSR, REW, RUN, or WTM SYSxxx: any logical unit nn: decimal number (01-99)

● Figure 11. Job Control Statements (Part 2 of 4)

Name	Operation	Operand	72	Remarks
//	OPTION	option1 [,option2,...]	⊬	option: can be any of the following LOG — Log control statements on SYSLST NOLOG — Suppress LOG option DUMP — Dump registers and main storage on SYSLST in the case of abnormal program end NODUMP — Suppress DUMP option LINK — Write output of language translator on SYSLNK for linkage editing NOLINK — Suppress LINK option DECK — Output object module on SYSPCH NODECK — Suppress DECK option LIST — Output listing of source module on SYSLST NOLIST — Suppress LIST option LISTX — Output listing of object module on SYSLST NOLISTX — Suppress LISTX option SYM — Punch symbol deck on SYSPCH NOSYM — Suppress SYM option XREF — Output symbolic cross-reference list on SYSLST NOXREF — Suppress XREF option ERRS — Output listing of all errors in source program on SYSLST NOERRS — Suppress ERRS option CATAL — Catalog program or phase in core image library after completion of Linkage Editor run STDLABEL — Causes all sequential disk or tape labels to be written on the standard label track USRLABEL — Causes all sequential disk or tape labels to be written on the user label track PARSTD — Causes all sequential disk on tape labels to be written on the partition label track 48C — 48-character set 60C — 60-character set
//	PAUSE	[comments]	⊬	PAUSE statement is always printed on 1052 (SYSLOG). If no 1052 is available, the statement is ignored.
//	RESET	{ SYS / PROG / ALL / SYSxxx }	⊬	Resets I/O device assignments
//	RSTRT	SYSxxx,nnnn,filename	⊬	SYSxxx: symbolic unit name of the device on which the checkpoint records are stored. Can be SYS000-SYSmax nnnn: four character identification of the checkpoint record to be used for restarting filename: the file named in the //VOL card containing the checkpoint
//	TLBL	filename,['file-ID'],[date],[file serial number],[volume sequence number],[file sequence number],[generation number],[version number]		filename: 1 to 7 characters identical to the DTF symbolic name for the file. NOTE: The following operands are all optional. If any is omitted on input files, no checking is done. If omitted on output files, the default option is assumed. file-ID: 1 to 17 alphameric characters (within apostrophes) indicating the name associated with the file. Default: The DTF filename is used. date: 4 to 6 numeric characters in the format: yy/dd. Indicates expiration date for output files and creation date for input files. For output files, a 1- to 4-character retention period (d-dddd) may be specified. Default: A 0-day retention period is assumed. file serial number: 1 to 6 numeric characters indicating the volume serial number of the first or only reel. This field is right-aligned and padded with zeros. Default: The volume serial number of the first file is assumed.

● Figure 11. Job Control Statements (Part 3 of 4)

Name	Operation	Operand	72	Remarks
//	TLBL	(Cont'd.)		file sequence number: 1 to 4 numeric characters in ascending order for each volume of a multiple file volume. Default: BCD 0001 is assumed. volume sequence number: 1 to 4 numeric characters in ascending order for each volume of a multiple volume file. Default: BCD 0001 is assumed. generation number: 1 to 4 numeric characters used to modify the file-ID. Default: BCD 0001 is assumed. version number: 1 or 2 numeric characters modifying the generation number. Default: BCD 01 is assumed.
//	TPLAB	'label fields 3-10'	⌀	'label fields 3-10': indicated fields of the standard tape file label. A 49-byte character string, contained within apostrophes.
//	TPLAB	'label fields 3-10 label fields 11-13'	C	'label fields 3-10: same as above C: any nonblank character in column 72 label fields 11-13': 20-character direct continuation of the same character string begun with fields 3-10 (no blanks, apostrophes, or commas separating)
//	UPSI	nnnnnnnn	⌀	n: 0, 1, or X
//	VOL	SYSxxx,filename	⌀	SYSxxx: can be SYS000-SYSmax filename: 1 to 7 alphabetic characters
//	XTENT	type,sequence,lower,upper,'serial no.',SYSxxx [,B_2]	⌀	type: 1 for data area (no split cylinder) 2 for overflow area (for indexed sequential file) 4 for index area (for indexed sequential file) 128 for data area (split cylinder) sequence: sequence number of extent within multi-extent file. Can be 0 to 255. lower: lower limit of extent in the form $B_1C_1C_1C_2C_2C_2H_1H_2H_2$ where: B_1 = 0 for 2311 and 2314; 0-9 for 2321 C_1C_1 = 00 for 2311 and 2314; 00-19 for 2321 $C_2C_2C_2$ = 000-199 for 2311 and 2314; 000-009 for 2321 H_1 = 0 for 2311 and 2314; 0-4 for 2321 H_2H_2 = 00-09 for 2311; 00-19 for 2321, 2314 All zeros are invalid. upper: upper limit of extent in the same form as for lower limit. Note: The last 4 strips of subcell 19 are reserved for alternate tracks on 2321 Data Cell. 'serial no.': 6-alphameric-character volume serial number contained within apostrophes. SYSxxx: can be SYS000-SYSmax B_2: 0 for 2311 and 2314; 0-9 for 2321
/*	ignored	ignored	⌀	Columns 1 and 2 are the only columns checked
/&	ignored	[comments]	⌀	Column 3 must be blank
*		comments	⌀	Column 2 must be blank

•Figure 11. Job Control Statements (Part 4 of 4)

Operator Commands[1]				System Communication	Job Control Statement[2]
IPL[3]	JC[4]	AR[5]	SPI[6]		
X				ADD	
	X	X		ALLOC	
	X		X	ASSGN	X
		X[7]		BATCH	
X[7]	X[7]	X[7]	X[7]	Ⓑ	
X[7]	X[7]	X[7]	X[7]	©	
	X	X	X	CANCEL	
	X			CLOSE	
				DATE	X
X				DEL	
			X	DLAB	X
			X	DLBL	X
	X			DVCDN	
	X			DVCUP	
			X	EXEC	X
			X	EXTENT	X
	X		X	HOLD	
				JOB	X
			X	LBLTYP	X
	X		X	LISTIO	X
	X	X	X	LOG	
	X	X	X	MAP	
		X[7]	X[7]	MSG	
	X			MTC	X
	X	X	X	NOLOG	
				OPTION	X
	X	X		PAUSE	X

Figure 12. System Communications (Part 1 of 2)

Operator Commands[1]				System Communication	Job Control Statement[2]
IPL[3]	JC[4]	AR[5]	SPI[6]		
			X[7]	READ	
	X		X	RELSE	
	X			RESET	X
				RESTART	X
X	X			SET	
		X		START	
	X			STOP	
		X	X	TIMER	
			X	TLBL	X
			X	TPLAB	X
	X			UCS	
	X		X	UNA	
	X[7]			UNBATCH	
				UPSI	X
			X	VOL	X
			X	XTENT	X
				/*	X
				/&	X
				*	X

[1]Entered through SYSRDR or SYSLOG (never preceded by a //)
[2]Entered through SYSRDR (always preceded by a //except where noted)
[3]Initial Program Loader
[4]JC Job Control (batch job processing)
[5]Attention routine
[6]Single program initiation
[7]Entered through SYSLOG only

Figure 12. System Communications (Part 2 of 2)

<table>
<tr><th>Operation</th><th>Operand</th><th>Remarks</th></tr>
<tr><td>ADD</td><td>X'cuu' [(k)],devicetype [,X'ss']</td><td>
X'cuu' = channel and unit numbers

k = S, if the device can be switched (physically attached to two adjacent channels). The designated channel (X'cuu') is the lower of the two channels.

k = 0 - 255 indicates the priority of a device that cannot be switched. If k is not given, a priority of 255 is assumed. In a multi-programming environment all devices have equal priority.

devicetype = (see table below)
<table>
<tr><th>Card Code</th><th>Actual Device</th></tr>
<tr><td>2400T9</td><td>Nine track tapes</td></tr>
<tr><td>2400T7</td><td>Seven track tapes</td></tr>
<tr><td>1442N1</td><td>1442N1 Card Reader Punch</td></tr>
<tr><td>2520B1</td><td>2520B1 Card Reader Punch</td></tr>
<tr><td>2501</td><td>2501 Card Reader</td></tr>
<tr><td>2540R</td><td>2540 Card Reader</td></tr>
<tr><td>2540P</td><td>2540 Card Punch</td></tr>
<tr><td>2520B2</td><td>2520B2 Card Punch</td></tr>
<tr><td>1442N2</td><td>1442N2 Card Punch</td></tr>
<tr><td>2520B3</td><td>2520B1 Card Punch</td></tr>
<tr><td>1403</td><td>1403 Printer</td></tr>
<tr><td>1403U</td><td>1403 Printer with UCS</td></tr>
<tr><td>1404</td><td>1404 Printer</td></tr>
<tr><td>1443</td><td>1443 Printer</td></tr>
<tr><td>1445</td><td>1445 Printer</td></tr>
<tr><td>1050A</td><td>1052 Printer-Keyboard</td></tr>
<tr><td>UNSP</td><td>Unsupported device if attached to Channel 0, not overrunnable, and not operated in burst mode.</td></tr>
<tr><td>UNSPB</td><td>Unsupported device attached to Channel 0, which is either overrunnable or operates in burst mode.</td></tr>
<tr><td>2311,2314</td><td>2311,2314 Disk Drive</td></tr>
<tr><td>2321</td><td>2321 Data Cell Drive</td></tr>
<tr><td>2701</td><td>2701 Data Adapter Unit</td></tr>
<tr><td>2702</td><td>2702 Trans. Control Unit</td></tr>
<tr><td>2703</td><td>2703 Trans. Control Unit</td></tr>
<tr><td>7770</td><td>7770 Audio Response Unit</td></tr>
<tr><td>7772</td><td>7772 Audio Response Unit</td></tr>
<tr><td>2260</td><td>1. Local display station (without X'ss')
2. 1053 attached to 2848 (with X'ss')</td></tr>
<tr><td>2671</td><td>2671 Paper Tape Reader</td></tr>
<tr><td>1285</td><td>1285 Optical Reader</td></tr>
<tr><td>1287</td><td>1287 Optical Reader</td></tr>
<tr><td>1412</td><td>1412 Magnetic Ink Character Reader</td></tr>
<tr><td>1419</td><td>1419 Magnetic Ink Character Reader</td></tr>
<tr><td>1419P</td><td>1419 Primary Control Unit on Dual Address Adapter</td></tr>
<tr><td>1419S</td><td>1419 Secondary Control Unit on Dual Address Adapter</td></tr>
</table>
X'ss' = device specifications
X'01' must be coded when the device type is a 2260 for 1053 attached to 2848 Local.
If absent, the following values are assumed.
X'C0' for 9-track tapes
X'90' for 7-track tapes
X'00' for non-tapes

2702 - MODE designates the SADxxx command
X'00' SAD0
X'01' SAD1
X'02' SAD2
X'03' SAD3
</td></tr>
</table>

Figure 13. IPL Commands (Initial Program Load) (Part 1 of 2)

<table>
<tr><th>Operation</th><th>Operand</th><th>Remarks</th></tr>
<tr><td></td><td></td><td>The tape specifications are:
<table>
<tr><th>Density (Bytes per Inch)</th><th>Parity</th><th>Convert Feature</th><th>Translate</th><th>ss</th></tr>
<tr><td>200</td><td>odd</td><td>on</td><td>off</td><td>10</td></tr>
<tr><td>200</td><td>odd</td><td>off</td><td>off</td><td>30</td></tr>
<tr><td>200</td><td>odd</td><td>off</td><td>on</td><td>38</td></tr>
<tr><td>200</td><td>even</td><td>off</td><td>off</td><td>20</td></tr>
<tr><td>200</td><td>even</td><td>off</td><td>on</td><td>28</td></tr>
<tr><td>556</td><td>odd</td><td>on</td><td>off</td><td>50</td></tr>
<tr><td>556</td><td>odd</td><td>off</td><td>off</td><td>70</td></tr>
<tr><td>556</td><td>odd</td><td>off</td><td>on</td><td>78</td></tr>
<tr><td>556</td><td>even</td><td>off</td><td>off</td><td>60</td></tr>
<tr><td>556</td><td>even</td><td>off</td><td>on</td><td>68</td></tr>
<tr><td>800</td><td>odd</td><td>on</td><td>off</td><td>90</td></tr>
<tr><td>800</td><td>odd</td><td>off</td><td>off</td><td>B0</td></tr>
<tr><td>800</td><td>odd</td><td>off</td><td>on</td><td>B8</td></tr>
<tr><td>800</td><td>even</td><td>off</td><td>off</td><td>A0</td></tr>
<tr><td>800</td><td>even</td><td>off</td><td>on</td><td>A8</td></tr>
<tr><td>800</td><td colspan="3">single-density 9-track tapes only</td><td>C0</td></tr>
<tr><td>1600</td><td colspan="3">single-density 9-track tapes only</td><td>C0</td></tr>
<tr><td>1600</td><td colspan="3">dual-density 9-track tapes only</td><td>C0</td></tr>
<tr><td>800</td><td colspan="3">dual-density 9-track tapes only</td><td>C8</td></tr>
</table>
1412/1419: X'ss' designates the external line to which the device is attached.

X'01' external line 7
X'02' external line 6
X'04' external line 5
X'08' external line 4
X'10' external line 3
X'20' external line 2</td></tr>
<tr><td>Ⓑ</td><td>blank</td><td>End-of-block. Ⓑ is alter code 5.</td></tr>
<tr><td>Ⓒ</td><td>blank</td><td>Cancel 1052 response. Ⓒ is alter code 0.</td></tr>
<tr><td>DEL</td><td>X'cuu'</td><td>cuu = unit number of device to be deleted.</td></tr>
<tr><td>SET</td><td>[DATE=value1] [,CLOCK=value2]</td><td>value1: in one of the following formats

mm/dd/yy or dd/mm/yy

mm: month (01 - 12)
dd: day (01 - 31)
yy: year (00 - 99)

value2: in the following format

hh/mm/ss

hh: hours (00 - 23)
mm: minutes (00 - 59)
ss: seconds (00 - 59)</td></tr>
</table>

● Figure 13. IPL Commands (Initial Program Load) (Part 2 of 2)

<table>
<tr><th>Operation</th><th>Operand</th><th>Remarks</th></tr>
<tr><td>ALLOC</td><td>{F1=nK [,F2=nK]}
{F2=nK [,F1=nK]}</td><td>Allocates foreground program areas.
Value of n must be even.</td></tr>
<tr><td>ASSGN</td><td>SYSxxx,address [{,X'ss'} [,TEMP]
[{,ALT }]</td><td>SYSxxx: can be SYSRDR
SYSIPT
SYSIN
SYSLST
SYSPCH
SYSOUT
SYSLOG
SYSLNK
SYSSLB
SYSRLB
SYS000 - SYSmax

address: can be X'cuu', UA, or IGN

X'cuu': c = 0-6
uu = 00-FE (0-254) in hex

UA: unassign

IGN: unassign and ignore

X'ss': Device specifications (used to specify mode settings for 7-track and 9-track tapes). If X'ss' is not specified, the mode settings remain unchanged. The LISTIO command may be used to determine the current mode settings for all magnetic tape units.

<table><tr><th>ss</th><th>Bytes per Inch</th><th>Parity</th><th>Translate Feature</th><th>Convert Feature</th></tr><tr><td>10</td><td>200</td><td>odd</td><td>off</td><td>on</td></tr><tr><td>20</td><td>200</td><td>even</td><td>off</td><td>off</td></tr><tr><td>28</td><td>200</td><td>even</td><td>on</td><td>off</td></tr><tr><td>30</td><td>200</td><td>odd</td><td>off</td><td>off</td></tr><tr><td>38</td><td>200</td><td>odd</td><td>on</td><td>off</td></tr><tr><td>50</td><td>556</td><td>odd</td><td>off</td><td>on</td></tr><tr><td>60</td><td>556</td><td>even</td><td>off</td><td>off</td></tr><tr><td>68</td><td>556</td><td>even</td><td>on</td><td>off</td></tr><tr><td>70</td><td>556</td><td>odd</td><td>off</td><td>off</td></tr><tr><td>78</td><td>556</td><td>odd</td><td>on</td><td>off</td></tr><tr><td>90</td><td>800</td><td>odd</td><td>off</td><td>on</td></tr><tr><td>A0</td><td>800</td><td>even</td><td>off</td><td>off</td></tr><tr><td>A8</td><td>800</td><td>even</td><td>on</td><td>off</td></tr><tr><td>B0</td><td>800</td><td>odd</td><td>off</td><td>off</td></tr><tr><td>B8</td><td>800</td><td>odd</td><td>on</td><td>off</td></tr><tr><td>C0</td><td>800</td><td colspan="3">single-density 9-track tapes only</td></tr><tr><td>C0</td><td>1600</td><td colspan="3">single-density 9-track tapes only</td></tr><tr><td>C0</td><td>1600</td><td colspan="3">dual-density 9-track tapes only</td></tr><tr><td>C8</td><td>800</td><td colspan="3">dual-density 9-track tapes only</td></tr></table>
1412/1419: X'ss' designates the external line to which the device is attached.

X'01' external line 7
X'02' external line 6
X'04' external line 5
X'08' external line 4
X'10' external line 3
X'20' external line 2

ALT: specifies alternate unit
Not valid for any system input file or SYSLNK or SYSLOG.

TEMP: specifies a temporary assignment for batched programs only</td></tr>
<tr><td>(B)</td><td>blank</td><td>End-of-block. (B) is alter code 5</td></tr>
<tr><td>(C)</td><td>blank</td><td>Cancel 1052 response. (C) is alter code 0.</td></tr>
</table>

●Figure 14. Job Control Commands (Issued only between Jobs or Job steps) (Part 1 of 3)

Operation	Operand	Remarks
CANCEL	blank	blank If issued for a batched job, blank operand cancels the partition issuing the message.
CLOSE	SYSxxx [{,X'cuu' [,X'ss'] / ,UA / ,IGN / ,ALT}]	SYSxxx: for 2311 or 2314 - SYSIN, SYSRDR, SYSIPT, SYSPCH, SYSLST for magnetic tape - SYSPCH, SYSLST, SYSOUT, SYS000 - SYSmax X'cuu', X'ss', UA, IGN, ALT: values as described in ASSGN command
DVCDN	X'cuu'	X'cuu': c = 0 - 6 uu = 00 - FE (0 - 254) in hex
DVCUP	X'cuu'	X'cuu': c = 0 - 6 uu = 00 - FE (0 - 254) in hex
HOLD	{F1 [,F2] / F2 [,F1]}	Holds all I/O assignments for the specified foreground area(s) from one job to the next (SPI mode only)
LISTIO	{SYS, PROG, F1, F2, ALL, SYSxxx, UNITS, DOWN, UA, X'cuu'}	Causes listing of specified I/O assignments on 1052
LOG	blank	Causes logging of job control statements on 1052
MAP	blank	Causes a map of areas in main storage to be printed on SYSLOG
MTC	opcode,{X'cuu' / SYSxxx} [,nn]	opcode: BSF, BSR, ERG, FSF, FSR, RUN, REW, or WTM X'cuu': c = 0 - 6 uu = 00 - FE (0 - 254) in hex SYSxxx: any logical unit assigned to tape nn: decimal number (01 - 99)
NOLOG	blank	Suppresses logging of job control statements and single program initiation commands
PAUSE	,[EOJ] any comment	Causes pause at end of current job step, or at EOJ
RELSE	{F1 [,F2] / F2 [,F1]}	Release all I/O assignments for the specified foreground area(s) SPI mode and set them to unassigned at the completion of any job specified for that area.

● Figure 14. Job Control Commands (Issued only between Jobs or Job Steps) (Part 2 of 3)

Operation	Operand	Remarks
RESET	{SYS / PROG / ALL / SYSxxx}	Resets I/O assignments to system standard
SET	[DATE=value1] [,CLOCK=value2] [,UPSI=value3] [,LINECT=value4] [,RCLST=value5] [,RCPCH=value6]	value1: in one of the following formats mm/dd/yy or dd/mm/yy mm: month (01-12) dd: day (01-31) yy: year (00-99) value2: in the following format hh/mm/ss hh: hours (00-23) mm: minutes (00-59) ss: seconds (00-59) value3: 0, 1, or X value4: standard number of lines for output on each page of SYSLST value5: decimal number indicating minimum number of SYSLST disk records remaining to be written before operation warning value6: decimal number indicating minimum number of SYSPCH disk records remaining to be written before operator warning
STOP	blank	Stops batched job program processing.
UCS	SYSxxx,phasename [,FOLD] [,BLOCK] [,NULMSG]	SYSxxx: The name of the logical unit assigned to a 1403 UCS Printer phasename: The symbolic name of the core image library containing the 240 EBCDIC characters to be loaded followed by an 80-character verification message. FOLD: Signifies that the buffer is to be loaded with the folding operation code in the CCW. BLOCK: Signifies that the 2821 latch is to be set to inhibit data checks generated by the 1403 UCS Printer. NULMSG: Signifies that the 80-character verification message is not to be printed on the 1403 after the buffer is loaded.
UNA	{F1 [,F2] / F2 [,F1]}	Unassigns the specified foreground area(s) I/O assignments.
UNBATCH	blank	Terminate batch processing

● Figure 14. Job Control Commands (Issued only between Jobs or Job Steps) (Part 3 of 3)

Operation	Operand	Remarks
ALLOC	{F1 = nK [,F2 = nk] / F2 = nK [,F1 = nK]}	Allocates foreground program areas Value of n is an even number
BATCH	{blank, [BG], [F1], [F2]}	Initiate batch processing in indicated partition
Ⓑ	blank	End-of-block. Ⓑ is alter code 5
Ⓒ	blank	Cancel 1052 response. Ⓒ is alter code 0
CANCEL	{blank / BG / F1 / F2}	Cancels execution of current job in specified area
LOG	blank	Causes logging of job control statements on SYSLOG
MAP	blank	Causes a map of areas in main storage to be printed on SYSLOG
MSG	{F1 / F2}	Transfers control to foreground program message routine
NOLOG	blank	Suppresses logging of job control statements on SYSLOG
PAUSE	[any operator comments]	Causes pause at end of current job step
START	{BG / F1 / F2}	Initiates a SPI program or restart a batched job previously stopped
TIMER	{BG / F1 / F2}	Causes interval timer support to be given to the specified partition

• Figure 15. ATTN Commands (Issued at any time)

<table>
<tr><th>Operation</th><th>Operand</th><th>Remarks</th></tr>
<tr><td>ASSGN</td><td>SYSnnn,address [{,X'ss' / ,ALT}]</td><td>SYSnnn: can be SYS000,SYS001,... or system logical units

address: can be X'cuu' or IGN

X'cuu': c = 0-6
uu = 00-FE (0-254) in hex

IGN: unassign and ignore

X'ss': used for magnetic tape only

<table>
<tr><th>ss</th><th>Bytes per Inch</th><th>Parity</th><th>Translate Feature</th><th>Convert Feature</th></tr>
<tr><td>10</td><td>200</td><td>odd</td><td>off</td><td>on</td></tr>
<tr><td>20</td><td>200</td><td>even</td><td>off</td><td>off</td></tr>
<tr><td>28</td><td>200</td><td>even</td><td>on</td><td>off</td></tr>
<tr><td>30</td><td>200</td><td>odd</td><td>off</td><td>off</td></tr>
<tr><td>38</td><td>200</td><td>odd</td><td>on</td><td>off</td></tr>
<tr><td>50</td><td>556</td><td>odd</td><td>off</td><td>on</td></tr>
<tr><td>60</td><td>556</td><td>even</td><td>off</td><td>off</td></tr>
<tr><td>68</td><td>556</td><td>even</td><td>on</td><td>off</td></tr>
<tr><td>70</td><td>556</td><td>odd</td><td>off</td><td>off</td></tr>
<tr><td>78</td><td>556</td><td>odd</td><td>on</td><td>off</td></tr>
<tr><td>90</td><td>800</td><td>odd</td><td>off</td><td>on</td></tr>
<tr><td>A0</td><td>800</td><td>even</td><td>off</td><td>off</td></tr>
<tr><td>A8</td><td>800</td><td>even</td><td>on</td><td>off</td></tr>
<tr><td>B0</td><td>800</td><td>odd</td><td>off</td><td>off</td></tr>
<tr><td>B8</td><td>800</td><td>odd</td><td>on</td><td>off</td></tr>
<tr><td>C0</td><td>800</td><td colspan="3">single-density 9-track tapes only</td></tr>
<tr><td>C0</td><td>1600</td><td colspan="3">single-density 9-track tapes only</td></tr>
<tr><td>C0</td><td>1600</td><td colspan="3">dual-density 9-track tapes only</td></tr>
<tr><td>C8</td><td>800</td><td colspan="3">dual-density 9-track tapes only</td></tr>
</table>

ALT: specifies alternate unit</td></tr>
<tr><td>(B)</td><td>blank</td><td>End-of-block. (B) is alter code 5</td></tr>
<tr><td>(C)</td><td>blank</td><td>Cancel 1052 response. (C) is alter code 0.</td></tr>
<tr><td>CANCEL</td><td>blank</td><td>blank cancels initiation of foreground program</td></tr>
<tr><td>DLAB</td><td>'label fields 1-3'
xxxx,yyddd,yyddd,'system code'
[,type]</td><td>'label fields 1-3': first three fields of Format 1 DASD file label. Is a 51-byte character string, contained within apostrophes and followed by a comma. Entire 51-byte field must be contained in the first of the two commands. A continuation character is in column 72. Field 1 is the file name (44-byte alphameric); field 2 is the format identifier (1-byte numeric); field 3 is the file serial number (6-byte alphameric).

xxxx: volume sequence number (4-digit numeric). Must begin in column 16 of the continuation command. Columns 1-15 are blank.

yyddd,yyddd: file creation date followed by file expiration date. Each is 5-digit numeric.</td></tr>
</table>

● Figure 16. Single Program Initiation Command (Issued only after START command) (Part 1 of 4)

Operation	Operand	Remarks
DLAB		'system code': This operand is not used by DOS. A string of 13 characters or blanks must be enclosed within apostrophes as shown. type: SD, DA, ISC, or ISE. If omitted, SD is assumed.
DLBL	filename, ['data file ID',] [date information], [codes]	filename: 1 to 7 characters. The filename corresponding to the DEF table name. data file ID: 1 to 44 characters, within apostrophes. The name associated with the data set. date information: 1 to 6 characters. The retention period of the file or the absolute expiration date. codes: 2 or 3 characters indicating the file type [SD, DA, ISC, ISE].
EXTENT	[B = bins], [symbolic unit], [serial number], [type], [sequence number], [number of tracks], [relative track], [split cylinder track]	bins: 1 or 2 characters. Not required for SD or ISFMS files. If omitted, bin zero is assumed for both parts. symbolic unit: symbolic unit of the volume in form SYSxx. serial number: 1 to 6 characters. If omitted th volume serial number of the preceding extent is used. type: one character indicating file type [1,2,4,8] sequence number: 1 to 3 characters. Not required for SD, DAM, or ISFMS. relative track: 1 to 5 characters. Not required for DA, SD or ISFMS files. number of tracks: 1 to 5 characters. Not required for SD, DAM or ISFMS files. split cylinder tracks: 1 or 2 numeric characters from 0-19. If omitted, extent type 8 is assumed.
EXEC	progname	progname: one to eight alphabetic characters.
HOLD	{F1 [,F2]} {F2 [,F1]}	Holds all I/O assignments for the specified foreground area(s) from one job to the next (SPI mode only).
LISTIO	{BG F1 F2 UA ALL}	Causes listing of specified I/O assignments.
LOG	blank	Causes logging of foreground initiation commands on SYSLOG.
MAP	blank	Causes a map of areas in main storage to be printed on SYSLOG.
MSG	{F1} {F2}	Transfers control to foreground program message routine.
NOLOG	blank	Suppresses logging of foreground initiation commands on SYSLOG.
PAUSE	[any operator comments]	Causes pause at end of current job step.
READ	X'cuu'	X'cuu': c = 0-6 uu = 00-FE (0-254) in hex Note: Device must be a card reader
RELSE	{F1 [,F2]} {F2 [,F1]}	Release all I/O assignments for the specified foreground area(s), SPI mode only, and set them to unassigned at the completion of any job specified for that area.
TIMER	{BG} {F1} {F2}	Causes interval timer support to be given to the specified partition.

Figure 16. Single Program Initiation Command (Issued only after START command) (Part 2 of 4)

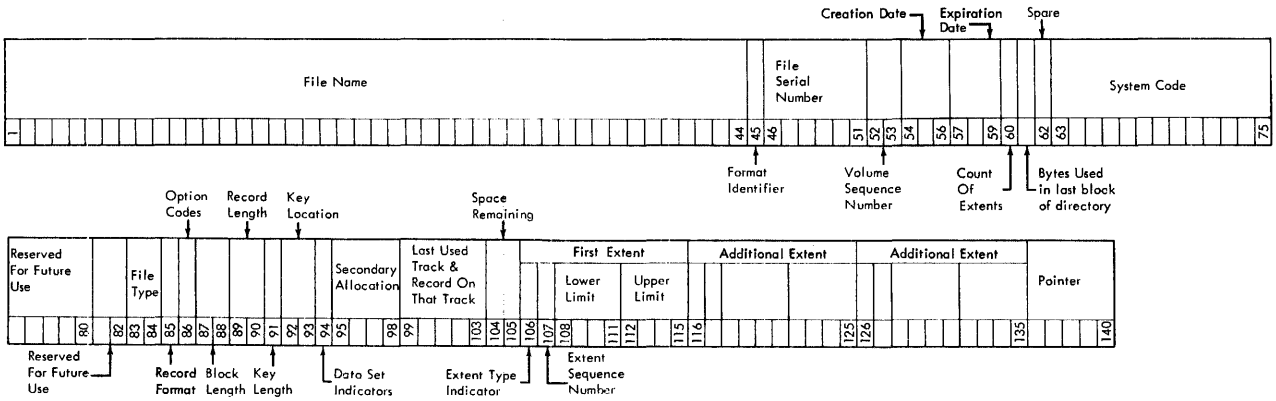
Operation	Operand	Remarks
TPLAB	'label fields 3-10' 'label fields 3-10'	'label fields-10': indicated fields of the standard tape file label. A 59-byte character string, contained with apostrophes. 'label fields 3-13': 20-character direct continuation of the same character string begun with fields 3-10 (no blanks, apostrophes, or commas separating). A continuation character must be present in column 72.
TLBL	filename,['file-ID'],[date],[file serial number],[volume sequence number],[file sequence number],[generation number],[version number]	filename: 1 to 7 characters identical to the DTF symbolic name for the file. NOTE: The following operands are all optional. If any is omitted on input files, no checking is done. If omitted on output files, the default option is assumed. file-ID: 1 to 17 alphameric characters (within apostrophes) indicating the name associated with the file. Default: The DTF filename is used. date: 4 to 6 numeric characters in the format: yy/dd. Indicates expiration date for output files and creation date for input files. For output files, a 1- to 4-character retention period (d-dddd) may be specified. Default: A0-day retention period is assumed. file serial number: 1 to 6 numeric characters indicating the volume serial number of the first or only reel. This field is right-aligned and padded with zeros. Default: The volume serial number of the first file is assumed. file sequence number: 1 to 4 numeric characters in ascending order for each volume of a multiple file volume. Default: BCD 0001 is assumed. volume sequence number: 1 to 4 numeric characters in ascending order for each volume of a multiple volume file. Default: BCD 0001 is assumed. generation number: 1 to 4 numeric characters used to modify the file-ID. Default: BCD 0001 is assumed. version number: 1 or 2 numeric characters modifying the generation number. Default: BCD 01 is assumed.
UCS	SYSxxx,phasename[,FOLD][,BLOCK][,NULMSG]	SYSxxx: The name of the logical unit assigned to a 1403 Printer. phasename: The symbolic name of the core image library containing the 240 EBCDIC characters to be loaded followed by an 80-character verification message. FOLD: Signifies that the buffer is to be loaded with the folding operation code in the CCW.

• Figure 16. Single Program Initiation Command (Issued only after START command) (Part 3 of 4)

Operation	Operand	Remarks
UCS	(Cont'd.)	BLOCK: Signifies that the 2821 latch is to be set to inhibit data checks generated by the 1403 UCS Printer. NULMSG: Signifies that the 80-character verification message is not to be printed on the 1403 after the buffer is loaded.
UNA	{F1 [,F2]} {F2 [,F1]}	Unassigns the specified foreground area(s) I/O assignments (SPI mode only).
VOL	SYSnnn,filename	SYSnnn: can be SYS000,SYS001,... filename: one to seven alphabetic characters
XTENT	type,sequence,lower,upper 'serial no.',SYSxxx[,B_2]	type: 1 for data area (no split cylinder) 2 for overflow area (for indexed sequential file) 4 for index area (for indexed sequential file) 128 for data area (split cylinder) sequence: sequence number of extent within multi-extent file. Can be 0-255. lower: lower limit of extent in the form $B_1C_1C_1C_2C_2C_2H_1H_2H_2$ where: B_1 = 0 for 2311 and 2314; 0-9 for 2321 C_1C_1 = 00 for 2311 and 2314; 00-19 for 2321 $C_2C_2C_2$ = 000-199 for 2311 and 2314 000-009 for 2321 H_1 = 0 for 2311 and 2314; 0-4 for 2321 H_2H_2 00-09 for 2311; 00-19 for 2321, 2314 upper: upper limit of extent in the same form as for lower limit. Note: The last 4 strips of sub cell 19 are reserved for alternate tracks on 2311 Data Cell. 'serial no.': 6-alphameric-character volume serial number contained within apostrophes SYSxxx: can be SYS000-SYSmax B_2: 0 for 2311 and 2314; 0-9 for 2321

● Figure 16. Single Program Initiation Command (Issued only after START command) (Part 4 of 4)

APPENDIX D: STANDARD DASD FILE LABELS



Format 1: This format is common to all data files on disk.

FIELD	NAME AND LENGTH	DESCRIPTION
1.	FILE NAME 44 bytes, alphameric EBCDIC	This field serves as the key portion of the file label. It can consist of three sections: 1. File ID is an alphameric assigned by the user and identifies the file. Can be 1-35 bytes if generation and version numbers are used, or 1-44 bytes if they are not used. 2. Generation Number. If used, this field is separated from File ID by a period. It has the format Gnnnn, where G identifies the field as the generation number and nnnn (in decimal) identifies the generation of the file. 3. Version Number of Generation. If used, this section immediately follows the generation number and has the format Vnn, where V identifies the field as the version of generation number and nn (in decimal) identifies the version of generation of the file. Note: Disk Operating System compares the entire field against the file name given in the DLAB card. The generation and version numbers are treated differently by Operating System.

The remaining fields comprise the DATA portion of the file label:

FIELD	NAME AND LENGTH	DESCRIPTION
2.	FORMAT IDENTIFIER 1 byte, EBCDIC numeric	1 = Format 1
3.	FILE SERIAL NUMBER 6 bytes, alphameric EBCDIC	Uniquely identifies a file/volume relationship. It is identical to the Volume Serial Number of the first or only volume of a multi-volume file.
4.	VOLUME SEQUENCE NUMBER 2 bytes, binary	Indicates the order of a volume relative to the first volume on which the data file resides.
5.	CREATION DATE 3 bytes, discontinuous binary	Indicates the year and the day of the year the file was created. It is of the form YDD, where Y signifies the year (0-99) and DD the day of the year (1-366).
6.	EXPIRATION DATE 3 bytes, discontinuous binary	Indicates the year and the day of the year the file may be deleted. The form of this field is identical to that of Field 5.
7A	EXTENT COUNT 1 byte, binary	Contains a count of the number of extents for this file on this volume. If user labels are used, the count includes the user label track as a separate extent. This field is maintained by the Disk Operating System programs.
7	BYTES USED IN LAST BLOCK OF DIRECTORY 1 byte, binary	Used by Operating System only for partition (library structure) data sets. Not used by Disk Operating System.
7C	SPARE 1 byte	Reserved for future use.
8	SYSTEM CODE 13 bytes	Uniquely identifies the programming system.
9	RESERVED 7 bytes	This field is reserved for future use.
10	FILE TYPE 2 bytes	The contents of this field uniquely identify the type of data file: Hex 4000 = Consecutive organization Hex 2000 = Direct-access organization Hex 8000 = Indexed-sequential organization Hex 0200 = Library organization Hex 0000 = Organization not defined in the file label.
11	RECORD FORMAT 1 byte	The contents of this field indicate the type of records contained in the file:

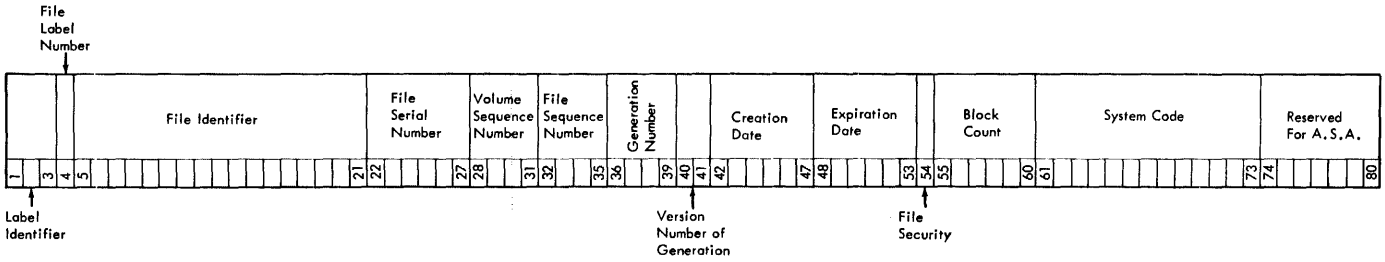
Bit Position	Content	Meaning
0 and 1	01	Variable-length records
	10	Fixed-length records
	11	Undefined format
2	0	No track
	1	File is organized using track overflow (Operating System/360 only)
3	0	Unblocked records
	1	Blocked records

Figure 17. Standard DASD File Labels (Part 1 of 2)

FIELD	NAME AND LENGTH	DESCRIPTION
		Bit Position / Content / Meaning
		4 / 0 / No truncated records
		1 / Truncated records in file
		5 and 6 / 01 / Control character ASA code
		10 / Control Character machine code
		00 / Control Character not stated
		7 / 0 / Records have no keys
		1 / Records are written with keys.
12	OPTION CODES 1 byte	Bits within this field are used to indicate various options used in building the file. BIT 0 = If on, indicates data file was created using Write Validity Check. 1-7 = unused
13.	BLOCK LENGTH 2 bytes, binary	indicates the block length for fixed length records or maximum block size for variable length blocks.
14.	RECORD LENGTH 2 bytes, binary	indicates the record length for fixed length records or the maximum record length for variable length records.
15.	KEY LENGTH 1 byte, binary	indicates the length of the key portion of the data records in the file.
16.	KEY LOCATION 2 bytes, binary	indicates the high order position of the data record.
17.	DATA SET INDICATORS 1 byte	Bits within this field are used to indicate the following: BIT 0 If on, indicates that this is the last volume on which this file normally resides. This bit is used by the Disk Operating System DTFSR routine only. None of the other bits in this byte are used by Disk Operating System. 1 If on, indicates that the data set described by this file must remain in the same absolute location on the direct access device. 2 If on, indicates that Block Length must always he a multiple of 8 bytes. 3 If on, indicates that this data file is security protected; a password must be provided in order to access it. 4-7 Spare. Reserved for future use.
18.	SECONDARY ALLOCATION 4 bytes, binary	indicates the amount of storage to be requested for this data file at End of Extent. This field is used by Operating System only. It is not used by Disk Operating System routines. The first byte of this field is an indication of the type of allocation request. Hex code "C2" (EBCDIC "B") indicates bytes, hex code "E3" (EBCDIC "T") indicates tracks, and hex code "C3" (EBCDIC "C") indicates cylinders. The next three bytes of this field is a binary number indicating how many bytes, tracks or cylinders are requested.
19.	LAST USED TRACK AND RECORD ON THAT TRACK 5 bytes discontinuous binary	indicates the last occupied track in a consecutive file organization data file. This field has the format CCHHR. It is all binary zeros if the last track in a consecutive data file is not on this volume or if it is not consecutive organization.
20	AMOUNT OF SPACE REMAINING ON LAST TRACK USED 2 bytes, binary	A count of the number of bytes of available space remaining on the last track used by this data file on this volume.
21.	EXTENT TYPE INDICATOR 1 byte	indicates the type of extent with which the following fields are associated: HEX CODE 00 Next three fields do not indicate any extent. 01 Prime area (Indexed Sequential); or Consecutive area, etc., (i.e., the extent containing the user's data records.) 02 Overflow area of an Indexed Sequential file. 04 Cylinder index or master index area of an Indexed Sequential file. 40 User label track area 80 Shared cylinder indicator.
22.	EXTENT SEQUENCE NUMBER 1 byte, binary	indicates the extent sequence in a multi-extent file.
23.	LOWER LIMIT 4 bytes, discontinuous binary	the cylinder and the track address specifying the starting point (lower limit) of this extent component. This field has the format CCHH.
24	UPPER LIMIT 4 bytes	the cylinder and the track address specifying the ending point (upper limit) of this extent component. This field has the format CCHH.
25-28	ADDITIONAL EXTENT 10 bytes	These fields have the same format as the fields 21-24 above.
29-32	ADDITIONAL EXTENT 10 bytes	These fields have the same format as fields 21-24 above.
33	POINTER TO NEXT FILE LABEL WITHIN THIS LABEL SET 5 bytes, discontinuous binary	the disk address (format CCHHR) of a continuation label if needed to further describe the file. If field 9 indicates Indexed Sequential organization, this field will point to a Format 2 file label within this label set. Otherwise, it points to a Format 3 file label, and then only if the file contains more than three extent segments. This field contains all binary zeros if no additional file label is pointed to.

Figure 17. Standard DASD File Labels (Part 2 of 2)

APPENDIX E: STANDARD TAPE FILE LABELS



The standard tape file label format and contents are as follows:

FIELD	NAME AND LENGTH	DESCRIPTION
1.	LABEL IDENTIFIER 3 bytes, EBCDIC	identifies the type of label HDR = Header -- beginning of a data file EOF = End of File -- end of a set of data EOV = End of Volume -- end of the physical reel
2.	FILE LABEL NUMBER 1 byte, EBCDIC	Always a 1
3.	FILE IDENTIFIER 17 bytes, EBCDIC	uniquely identifies the entire file, may contain only printable characters.
4.	FILE SERIAL NUMBER 6 bytes, EBCDIC	uniquely identifies a file/volume relationship. This field is identical to the Volume Serial Number in the volume label of the first or only volume of a multi-volume file or a multi-file set. This field will normally be numeric (000001 to 999999) but may contain any six alphameric characters.
5.	VOLUME SEQUENCE NUMBER 4 bytes	indicates the order of a volume in a given file or multi-file set. The number must be numeric (0000-9999), and multiple volume files are numbered in consecutive sequence by the OPEN(R) macro on output and thus checked in that manner on input.
6.	FILE SEQUENCE NUMBER 4 bytes	assigns numeric sequence to a file within a multi-file set.
7.	GENERATION NUMBER 4 bytes	numerically identifies the various editions of the file.
8.	VERSION NUMBER OF GENERATION 2 bytes	indicates the version of a generation of a file.
9.	CREATION DATE 6 bytes	indicates the year and the day of the year that the file was created: Position / Code / Meaning 1 / blank / none 2-3 / 00-99 / Year 4-6 / 001-366 / Day of Year (e.g., January 31, 1965 would be entered as 65031)
10.	EXPIRATION DATE 6 bytes	indicates the year and the day of the year when the file may become a scratch tape. The format of this field is identical to Field 9. On a multifile reel, processed sequentially all files are considered to expire on the same day.
11.	FILE SECURITY	indicates security status of the file. 0 = no security protection 1 = security protection. Additional identification of the file is required before it can be processed.
12.	BLOCK COUNT 6 bytes	indicates the number of data blocks written on the file from the last header label to the first trailer label exclusive of tape marks. Count does not include checkpoint records. This field is used in Trailer Labels.
13.	SYSTEM CODE 13 bytes	uniquely identifies the programming system.
14.	RESERVED 7 bytes	Reserved for American Standards Association (A.S.A.). At present, should be recorded as blanks.

Figure 18. Standard Tape File Labels

For a complete description of the various label formats, refer to IBM System/360 Disk Operating System, Data Management Concepts, Form C24-3427. These displays can be obtained by replying CANCELV or DSPLYV to certain LIOCS messages. (Refer to the section, LIOCS (Disk) and Common Open/Close Messages, in this manual.

```
CANCELV DISPLAY
VOLUME SERIAL NUMBER IS  111111                                                                    11/04/66

00C7000001    FORMAT 4 LABEL

04040404  04040404  04040404  04040404  04040404  04040404  04040404  04040404  04040404  04040404  04040404  F4000000
0000009E  00000000  001E9001  000000CB  000A0E29  51141401  0219130A  00000000  00000000  00000000  00000000  00000000
00000000  00000000  00010000  C7000000  C7000400  00000000  00000000  00000000  00000000  00000000  00000000

00C7000002    FORMAT 5 LABEL

05050505  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  F5000000
00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000

00C7000003    FORMAT 1 LABEL

FILEA                                        SERIAL NO. 111111  VOL NO. 0001  420043-420043  010000  SYS. CODE IS  16 K DISK BOS
0000000000    0000400000    0000000000    0000000000    0000000000    0000000000
0100 00330000-006E0009    0000 00000000-00000000    0000 00000000-00000000                          POINTER IS  0000000000

00C7000004    FORMAT 1 LABEL

SYSTEM WORK FILE NO. 1                       SERIAL NO. 111111  VOL NO. 0001  42006E-63016D  010000  SYS. CODE IS  DOS
0000000000    0000400000    0000000000    0000008000    0000000000    0000000000
0100 00970000-009D0009    0000 00000000-00000000    0000 00000000-00000000                          POINTER IS  0000000000

00C7000005    FORMAT 1 LABEL

2311 DTFPH-SEQUENTIAL OPEN 'NO' USER LABELS.  SERIAL NO. 111111  VOL NO. 0001  41014D-42012C  030000  SYS. CODE IS  ** SIMONIK **
0000000000    0000400000    0000000000    0000000000    0000000000    0000000000
0100 00AF0000-00AF0002    0101 00AF0003-00AF0003    0102 00AF0004-00AF0004                          POINTER IS  0000000000

VTOC LISTING COMPLETED
```

DSPLYV option provides identification information and XTENT boundaries for Format 1 and/or 3 labels. This information is extracted from the VTOC and appears in the following format.

```
DSPLYV DISPLAY
                                          Serial No.    Volume No.
VOLUME SERIAL NO. IS 111111                                          11/04/66

FILEA                                     1111111       0001   420043-420043
0100 00330000-006E0009                                                        Creation & Expiration Dates
                  Xtent Information

SYSTEM WORK FILE NO. 1                    1111111       0001   42006E-63016D
0100 00970000-009D0009


2311 DTFPH-SEQUENTIAL OPEN 'NO' USER LABELS.1111111     0001   41014D-42012C
0100 00AF0000-00AF0002    0101 00AF0003-00AF0003    0102 00AF0004-00AF0004

VTOC LISTING COMPLETED
```

Figure 19. VTOC Listings

APPENDIX G: SEREP

SEREP (System Environment Recording, Editing, and Printing) is a program distributed as part of the diagnostic package for each System/360 installation. The program, with its operating procedures, is available to the installation's IBM Customer Engineer. (Each System/360 model has a different version of the SEREP program. Operating procedures, however, are the same for all versions.)

SEREP provides a means of printing the system status information stored in main storage at the time of a machine malfunction. When a condition occurs requiring the use of SEREP, the wait state is entered, and main storage byte 1 contains an S. The SEREP program must be loaded via the standard IPL procedure. Malfunction information is produced as output on an online printing device. The SEREP printout indicates the environment of the error and the device involved.

The address of the I/O device printed on the SEREP report is compared with the valid device addresses available to the system. The printing of a valid address indicates that a machine malfunction has occurred. The printing of an invalid device address indicates that a programming error has occurred. After SEREP is completed, the system is restarted via the IPL procedure.

If the 1052 Printer-Keyboard is inoperable, limited operations (refer to System Operating Without a 1052) may continue, under some circumstances, by displaying messages in low core and entering the proper reply directly in core. In this appendix, IPL messages and device error recovery messages are described.

IPL ERROR MESSAGES

If the machine enters the wait state during an IPL procedure, the operator should display the first five bytes of low core. The IPL error message number and action code are displayed in hexadecimal in these bytes (see Figure 11). For example:

Message 0I11A appears in low core bytes 0-4 as
F0C9F1F1C1

The operator should look up this message (refer to System-to-Operator Messages) and perform the indicated action.

DEVICE ERROR RECOVERY MESSAGES

Figure 11 shows the information that might be found in the low core error bytes. If byte 0 contains a binary number 08-60, it indicates a (0P) device error recovery message. If the 1052 is inoperable when an error recovery message is issued, the system immediately enters the wait state until the operator replies. The operator should display the contents of byte 1 to obtain the action code, in BCD.

If code is A (C1): The operator should refer to System-to-Operator Messages. If the operator decides to try to continue operations, it will be necessary to display the next two bytes (2 and 3) of low core to obtain the channel and unit number of the device. The operator should then:

1. Perform any manual recovery procedures implied by the error condition. (Refer to component description and operating procedures manual for the device.)

2. Ready the device. No response is necessary. If the operator wishes to cancel, he should insert X'03' in byte 4 and press INTERRUPT.

If code is D (C4): A trial-and-error procedure must be performed. The operator should first store X'01' (RETRY) in byte 4, then press INTERRUPT on the console. If the system accepts this reply, the machine exits from the wait state. If not, store one of the following replies in byte 4:

- X'02' (IGNORE)

- X'03' (CANCEL)

Then press INTERRUPT. When the reply is accepted by the system, the machine will exit from the wait state.

Byte 0 (Binary) Message	Byte 1 (BCD)	Byte 2 (Binary)	Byte 3 (Binary)	Action
00	S	Not used	Not used	Machine Check. System must be IPL'ed. Load SEREP.
01	S	Reserved	Reserved	Channel Failure: Interface Control Check, or Channel Control Check. System must be IPL'ed. Load SEREP.
02				Reserved
03	W	Channel	Unit	DOS - Irrecoverable disk error during program fetch. The first six sense bytes are placed in hex Bytes 5-A. System must be IPL'ed.
04	W	Not used	Not used	Cancel condition has occurred while performing a Supervisor function. (Not a Supervisor detected problem-program error.) Normally a Program Check while in Supervisor State. System must be IPL'ed.
05	W	Channel	Unit	I/O Error Queue has overflowed as the result of an I/O error on a program fetch channel program. System must be IPL'ed.
06				Reserved
07	W	Channel	Unit	IPL I/O error. Channel and unit indicate whether SYSRES or communication device. System should be re-IPL'ed.
08-60	Action Indi-cator	Channel	Unit	Error recovery messages. Refer to 0P messages in message section.

Figure 20. Lcw Core Error Bytes

The complete text for message 0S04I is:

ILLEGAL SVC - HEX LOCATION nnnnnn -SVC CODE nn

where nn is in hexadecimal notation.

This message can result from the following causes.

1. When nn is 02: The phase name given does not start with $$B, or

   For LIOCS, macros called in invalid sequence. As a result, an SVC8 is issued after an SVC2 before an SVC9 has been issued to free the transient area, or

   For other conditions, the user specified a temporary exit (SVC8) for a logical transient. In the temporary exit routine, another routine is called (by an SVC2) before an SVC9 is issued to free the transient area.

2. When nn is 05: The "to" range specified in the MVCOM macro is invalid, or

   MVCOM macro was issued by a foreground program, operating under single program initiation.

3. When nn is 0A, 12, or 13: The interval timer was not allocated to this partition, or

   The supervisor was generated without the timer option.

4. When nn is 11: The call was not given by a logical transient routine.

5. When nn is 22, 23, or 26: The caller did not have a PSW key of zero. This is applicable only in a multiprogramming system.

6. When nn is 32: For LIOCS, an imperative macro (such as WRITE or PUT) was issued to a module that does not contain the requested function, or

   For LIOCS, an invalid ASA first character for the printer was used, or

   For COBOL, a wrong length record was detected in the object program.

7. When nn is any other value: The supervisor function requested by the operand of the SVC is not defined for the Supervisor being used.

APPENDIX J: MESSAGE INDEX

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