IBM

GC34-0070-0

Series/1

Stand-Alone Utilities

User's Guide

Program Number 5719-SC2

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Contents

Preface

The IBM Series/1 Stand-Alone Utilities Guide describes each of the utility programs. It tells you:

- What the utility does
- How to use it
- The output you receive
- How to handle errors

This publication is organized into six chapters, each containing groups of related utility programs. Appendix M covers messages generated by each program and the appropriate action to be taken.

To effectively use the stand-alone utility programs, you should be familiar with:

- Basic data processing concepts
- Assembler language coding
- Modular programming concepts

Prerequisite Publications

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Chapter 1. Introduction

This manual explains how to use each of the utilities in detail.

For each utility there is an example of a typical session of using the utility. This example shows your interaction with the utility—the prompts it issues and the responses you supply. It also covers errors that may occur during the interaction and how you handle them. The IBM-supplied names (module ID's) for these programs are shown in parentheses after the program name.

The Utilities are:

- *Automatic System Build* copies a portion of the complete system from a diskette to the system disk.
- *System Verification (SF)* checks to find if all components of the system were copied to the system disk and also prints the location of the components on disk.
- *Diskette IPL Bootstrap (IP)* loads a program 1 cylinder in length (from location: cylinder 1, head 0, sector 1) into the high end of storage.
- *Disk IPL Bootstrap/Loader (L1, L2)* loads programs from the disk into main storage.
- *Diskette Initialization (RI)* initializes the diskette, writing ID records and checking for defective cylinders, and assigns alternate cylinders.
- *Disk Initialization (FI)* initializes the disk, verifying sector IDs and checking for defective sectors, and assigns alternate sectors.
- *Create Diskette HDR1 (CH)* creates a HDR1 record for a diskette, using information that you specify.
- *Delete Diskette HDR1 (DH)* deletes the HDR1 record for a specified diskette data file.
- *Diskette to Disk Copy (RF)* copies data from a specified diskette data file to a specified disk data file.
- *Disk to Diskette Copy (FR)* copies data from a specified disk data file to a specified diskette data file.
- *Diskette to Printer Dump (RD)* dumps the contents of a specified area on the diskette to the printer.
- *Disk to Printer Dump (FD)* dumps the contents of a specified area on the disk to the printer.
- *Diskette Patch (TR)* applies a patch (which you enter at the operator station) to a specified location on the diskette.
- *Disk Patch (TF)* applies a patch (which you enter at the operator station) to a specified location on the disk.
- *Storage to Diskette Dump (S1, S2)* dumps the contents of main storage to the diskette.
- *Storage to Printer Dump (P1, P2)* dumps the contents of main storage to the printer.

HARDWARE OVERVIEW

The following is a list of hardware products referred to in this manual. The list includes the product name and the term used within this manual when referring to the product.

Product Name	Term Used Hereafter
IBM 4955 or 4953 Processor	processor
IBM 4962 Disk Module	disk
IBM 4964 Diskette Module	diskette
IBM 4974 Printer	printer
Any device that can be used as an operator station and is attached to the system through the ASCII teletypewriter adapter	operator station

The minimum hardware configuration required to run a   Series/1   program is:

- 1 processor with 32KB of storage
- 1 diskette unit
- 1 disk
- 1 printer
- 1 operator station
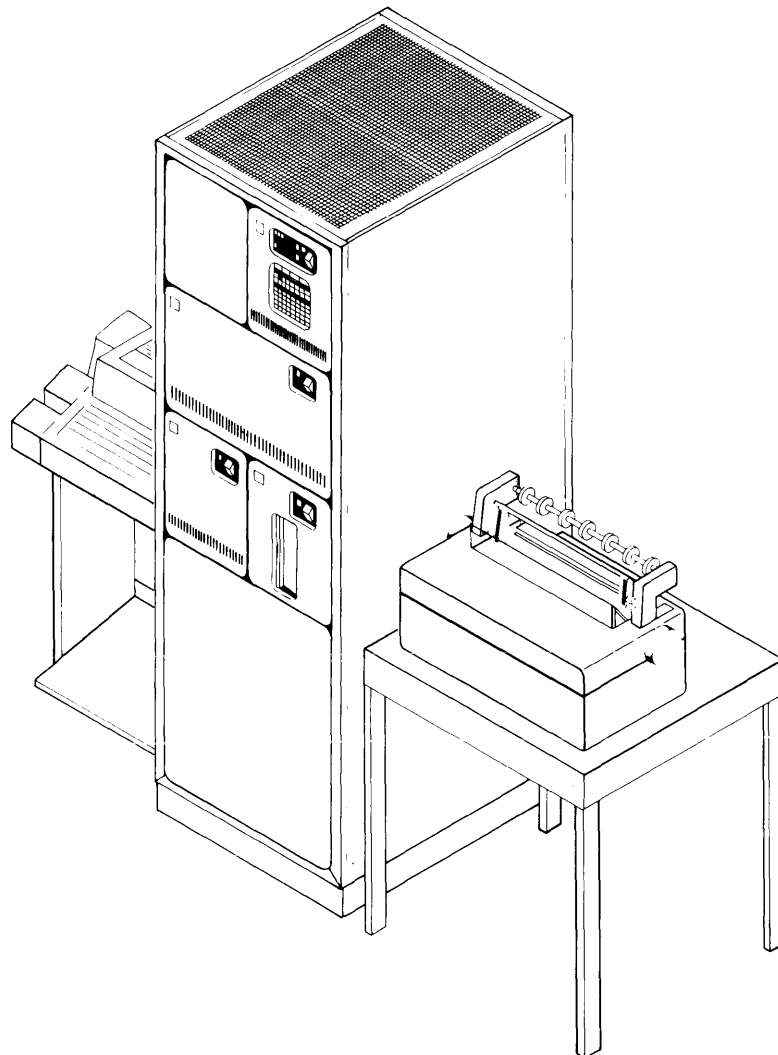
USING THE UTILITY PROGRAMS

All programs (except the Automatic System Build, Storage to Diskette Dump, and Storage to Printer Dump) are IPLed from the disk. All programs are on disk in a storage-image format, preceded by a header record designating the load point, entry point, size of the program, and maintenance information.

To invoke a program, set the IPL switch to primary (disk) and press the LOAD key on the system console. Once the loader is in main storage, it prints a message at the operator station requesting the name or starting sector address of the program to be loaded:

IP100A EXEC=

You can enter either the 2-character name for the IBM-supplied programs (for example, RI for diskette initialization) or the program's starting sector address. For any other programs, you must enter the program's starting sector address. Sector addresses must be specified in this format:

ccchss

where:

ccc = the cylinder number
h = the head number
ss = the sector number

After the program is loaded, it issues prompts at the operator station requesting you to enter certain information needed by the program before it can begin processing. This information is covered in the chapters describing the individual utilities.

The utility prints an error message at the operator station and reissues the prompt if (1) the information you enter is syntactically incorrect or (2) if the utility encounters a recoverable error. Each time a prompt or message is printed at the operator station, it ends with a carriage return. You must also end your entries with a carriage return.

If you are typing a line that is longer than 72 characters, there is an automatic carriage return after you type the 72nd character.

In the Series/1 programs, a contiguous, logically related collection of data on a single disk or diskette is called a data file. Through the operator station, you can refer to a data file by specifying its device address, starting sector address, and ending sector address. Enter the information in this format:

ddd,ccchss,ccchss

where:

ddd = the device address
ccchss,ccchss = the starting and ending sector addresses of the data file

The device address are fixed as follows:

Device Address	Device Type
000	operator station
001	printer
002	diskette
003	disk

The ranges of the ccc, h, and ss values are:

	cylinder (ccc)	head (h)	sector (ss)
Diskette—double-sided	0—74	0—1	1—26
—single-sided	0—74	0	1—26
Disk			
Disk	0—302	0—1	0—59

Note. Cylinder 0 of the disk is reserved for the Bootstrap and Loader; cylinder 1 is reserved for alternate sector assignments; cylinder 302 is reserved for customer engineer use. On the diskette, track 0 is reserved for system use; tracks 75 and 76 are reserved as alternate tracks to replace tracks that become defective.

Both the disk and diskette are supported in a *cylinder mode*. For example, the disk sector that follows sector address 005059 is 005100, and the disk sector that follows sector address 005159 is 006000.

For more detailed information on the disk and diskette, refer to the *IBM 4962 Disk Storage Unit Description*, GA34-0024, and the *IBM 4964 Diskette Input/Output Unit Description*, GA34-0023.

If a program creates or moves data files, it prints a message at the operator station indicating the last sector written:

id099I LAST SECTOR WRITTEN = ccchss

Messages are *always* printed on one device line. Some of the messages in this manual are shown on two lines because of the message length.

Making Corrections at the Operator Station

If you should make typing errors while entering data at the operator station, you can correct these errors in the following manner.

To correct one or more characters:

You meant to type	CO 10,50,100
But you typed	CO 10,60
Now type	← ← 50,100

Type one left arrow (←) for each character you typed after the *last correct character*. Retype the characters correctly and continue typing.

To correct an entire line:

You meant to type	CT 10,20,'ABC','DEF'
But you typed	CT 10,200,'ABC','DEF'
Now type	↑

Retype the line. An up arrow (↑) causes a carriage return and you can correctly reenter your line.

Note. If you want to interrupt the printing process at the operator station, hold down the CTRL key, then press the A key.

Automatic System Build (SB)

WHAT THIS PROGRAM DOES

The Automatic System Build program copies to disk the diskette shipped from IBM. A copy of this program resides on the diskette. The layout of the diskette is shown below.

ccchss	DISKETTE
000001	IPL/Bootstrap
000003	Reserved
001001	Auto-System Build
	Disk IPL/Bootstrap
	Disk Loader
	System Verification
	Diskette IPL/Bootstrap
	Storage to Printer Dump (Phase A)
	Storage to Printer Dump (Phase B)
	Storage to Diskette Dump (Phase A)
	Storage to Diskette Dump (Phase B)
	Disk Initialization
	Diskette Initialization
	Create HDR1
	Delete HDR1
	Diskette to Printer Dump
	Disk to Printer Dump
	Diskette to Disk Copy
	Disk to Diskette Copy
	Diskette Patch
	Disk Patch

The loader loads the contents of the diskette to a predefined area of the disk. When the diskette has been copied, the system is built on disk.

HOW TO USE IT

(1)   mount the diskette, as shipped from IBM,
(2)   set the console IPL switch to alternate, and
(3)   press the LOAD Key.

The hardware loads the bootstrap, which in turn loads the Automatic System Build program. No further input is necessary.

The program issues this message:

```
SB000I AUTOMATIC SYSTEM BUILD STARTED
```

Once the diskette is mounted, the program prints, from the VOL1 label, the volume identifier field in the following message:

```
SB100I DISKETTE VOLID=nnnnnn
```

where nnnnnn is the volume identifier for the diskette. It then copies, to a predefined location on the disk, the contents of the diskette. There is no operator input required to build the system. Upon completion the program issues this message:

```
SB001I AUTOMATIC SYSTEM BUILD UTILITY COMPLETED
```

THE OUTPUT YOU RECEIVE

Output consists of a complete diskette copied onto the disk and the three preceding messages. If any errors occur while copying the diskette to disk, an appropriate I/O error message is printed at the operator station.

HOW TO HANDLE ERRORS

If an I/O error occurs, the program terminates after issuing an error message to the operator station. See Appendix M for a complete discussion of possible error codes.

EXAMPLE

The following is an example of the automatic system build program. In this example, the diskette mounted has VOLID=PID002.

1. Mount the IBM diskette.
2. Set console IPL switch to alternate.
3. Press the LOAD Key.

```
SB000I AUTOMATIC SYSTEM BUILD STARTED
SB100I DISKETTE VOLID=PID002 COPIED
SB001I AUTOMATIC SYSTEM BUILD UTILITY COMPLETED
```

After the diskette is copied, your system will be built on disk.

Now use the System Verification program to insure that the components have been correctly copied to the system disk.

System Verification (SF)

WHAT THIS PROGRAM DOES

After you load the program, it ensures that your system is built properly by cross-checking each module on your IPLed system disk against a table containing expected module names. If any modules are missing, a message is printed indicating which specific program is not on the disk system.

HOW TO USE IT

Press the LOAD key. After the EXEC= message is printed at the operator station, enter either SF or the starting sector address (ccchss) of the program. When it is loaded, no further input is required. The program performs the verification, using an internal table of module names expected to be on the disk.

THE OUTPUT YOU RECEIVE

If your IPLed system disk is an incomplete system, an error message is printed at the operator station indicating the name of the module that was not found. No further verification processing is possible.

The system map name contains header record data for all modules encountered before the error occured. If your system is correct, a system map containing header record data for each load module is printed, and a message verifying that the system was correctly built is printed at the operator station.

The system map is printed in the following format:

Program Name	ccchss	Entry Point	Load Point	Module Length	User Data
xx	ccchss	xxxx	yyyy	zzzz	aaaaa
•					
•					
•					

where:

xx	=	the 2-character component ID
ccchss	=	the address of header record on the disk
xxxx	=	the entry point of the module in ccchss format
yyyy	=	the load point of the module in ccchss format
zzzz	=	the length of the module in hexadecimal
aaaaaa	=	the description of the 2-character component ID

HOW TO HANDLE ERRORS

If the program encounters any of the following errors, it issues a message at the operator station:

- Invalid header ID
- Module missing on system disk
- Module name missing in the system table
- Incorrect header chain

If an unrecoverable error occurs, the program abnormally terminates. To reinvoke the program, you must reIPL. Unrecoverable errors are:

- Operator Station I/O error
- Disk I/O error

EXAMPLE

The following is an example of the System Verification program.

Operator Station Printout	Explanation
IP100A EXEC=	The loader issues a request for the address of the program to be loaded.
SF	You enter the name of the System Verification program.
SF000I SYSTEM VERIFICATION STARTED	The System Verification program has started.
xx ccchss xxxxxx yyyyyy zzzzzz	The system map is printed at the printer.
SF200I SYSTEM CORRECTLY BUILT	There has been a successful system verification.
SF001I SYSTEM VERIFICATION COMPLETE	The program is finished.

Diskette IPL Bootstrap (IP)

WHAT THIS UTILITY DOES

When you press the LOAD key on the console, the hardware loads the bootstrap into main storage from the diskette. The bootstrap, in turn, loads the contents of cylinder 1, head 0, from the IPLed diskette. When the bootstrap is finished, register 7 contains the device address of the diskette you IPLed from. The program is loaded into the high end of storage and then given control.

HOW TO CREATE A DISKETTE

You must create a special diskette for the diskette IPL bootstrap. See example below.

Locate the ccchss of the program IP on the system verification listing. Using the disk to diskette copy program, copy the program IP to the diskette. You must start the copy 1 disk sector beyond the beginning of the program to remove the header record. IP must be placed on the diskette at cylinder 0, head 0, sectors 1 and 2.

HOW TO USE IT

You invoke this utility by setting the IPL switch to alternate (diskette) and then pressing the LOAD key.

Note. The bootstrap must be on cylinder 0, head 0, sectors 1 and 2 of the diskette.

HOW TO HANDLE ERRORS

If a diskette I/O error occurs, the utility tries to recover, if it can; otherwise, it terminates.

EXAMPLE

The following is an example of placing the diskette bootstrap on a diskette.

Operator Station Printout	Explanation
IP100A EXEC= FR	The loader issues a request for the program that is to be executed. You enter the name of the Disk to Diskette Copy utility.
FR001I DISK TO DISKETTE COPY STARTED	The Disk to Diskette Copy utility has started.
FR100A FROM DATA AREA=	The utility prompts for the source data file information.
003, 002126, 002126	You enter the device address and the starting sector address +1 of the program IP. This removes the header record from the diskette bootstrap. Only one disk sector is copied.
FR200A TO DATA AREA=	The utility issues this prompt for the destination data file information.
002, 000001, 000002	You enter the device address and the starting sector address where the bootstrap must reside on cylinder 0, head 0, sectors 1 and 2.
FR099I LAST SECTOR WRITTEN IS 000002	The utility prints the address of the last sector written on the diskette.
FR001I DISK TO DISKETTE COPY COMPLETED	The copy was successfully completed.
FR100A FROM DATA AREA=	The utility prompts for a new source data file for the next copy operation.

Disk IPL Bootstrap/Loader (L1, L2)

WHAT THIS UTILITY DOES

When you press the LOAD key on the console, the hardware loads the bootstrap into main storage from the disk. The bootstrap then loads and gives control to the loader. Once the loader is in main storage, it issues a prompt through the operator station requesting the two character IBM-supplied name or the ccchss location of the program you want loaded and given control on level 0. The loader brings into storage the program you request and passes control to it.

Note. When the requested program receives control, these conditions exist:

- On levels 1, 2, and 3 the LSR, IAR, and all general-purpose registers contain zeros.
- On level 0:
  - Register 3 contains the device addresses of the operator station in the first byte and the printer in the second byte.
  - Register 4 contains the size of storage:

    7FFF is 32K
    BFFF is 48K
    FFFF is 64K.

  - Register 5 contains the device address of the IPLed device in the low-order byte.
  - Register 6 contains the value of the cylinder that contains the header record of the requested program.
  - Register 7 contains the values for the head and sector that contain the header record of the requested program.
- In the LSR, the supervisor state bit for level 0 is on.

HOW TO USE IT

You invoke this utility by pressing the LOAD key.

Note. The bootstrap must be on cylinder 0, head 0, sector 0 of the disk. The loader resides on cylinder 0, head 0, sectors 1–13.

Once the loader is in control, you can specify which program you want loaded for execution. The loader prints this prompt at the operator station:

```
IP100A EXEC=
```

All IBM-supplied programs can be loaded by name. All user programs are loaded by disk address. If you load a program by name, enter:

```
program name
```

where:

program name is a 2-character IBM-supplied name for the program.
If you enter the program's location, it must be in this form:

```
ccchss
```

where:

ccc = a 3-digit decimal cylinder number in the range 002–301
h = the head number, either 0 or 1
ss = a 2-digit decimal sector number in the range 00–59

The loader assumes that the program you requested is on the same device you IPLed from. There is a restriction on how big this program can be. The program's maximum size is the size of storage minus 2K bytes. The last 2K of storage is reserved for the loader, but may be used after control is passed to the program.

If the information you enter is syntactically incorrect, an error message is printed at the operator station and the prompt is repeated. If the information you enter is syntactically correct, the loader checks your program's header record to determine:

- If it is a valid header
- The load point of the program
- The entry point of the program
- If the program can fit into the available storage

If an invalid header is found, the prompt is reissued. If the information is correct, your program is given control.

THE OUTPUT YOU RECEIVE

The only output from this utility is the prompt IP100A EXEC= and possibly some error messages.

HOW TO HANDLE ERRORS

If the utility encounters a recoverable error, it prints an error message and reissues the prompt. Recoverable errors are:

- Invalid sector address—address is out of range for the device, contains non-decimal digits, or is the incorrect length
- Invalid header record
- Invalid program name
- Program too large for storage

If the utility encounters an unrecoverable error, it issues a LEX with a code in the operand of the instruction. To reinvoke the utility, you must reIPL. Unrecoverable errors are:

- I/O error to the operator station
- I/O error to disk

Diskette Initialization (RI)

WHAT THIS UTILITY DOES

This utility initializes either a single-side or double-sided diskette in a diskette drive. The initialization consists of three steps:

- The utility formats each track into 128-byte sectors.
- The utility analyzes each track. If it finds a defective sector, it considers that entire cylinder to be defective, and assigns an alternate cylinder. If more than two cylinders are defective, the diskette is flagged as unusable.
- On cylinder 0, head 0, the utility writes the VOLID (volume identification), one HDR1 (header 1) describing cylinders 1–74 as 1 data set, deletes unused HDR1s, and the ERRMAP (error map). See the following pages for the format of the VOL1 and HDR1 field. The contents of ERRMAP varies based on the results of the surface analysis done on the diskette, and is therefore not initialized to a standard format.

If you try to initialize a diskette that has been previously initialized, you destroy all data on the diskette. Reinitialization rewrites the complete diskette surface.

VOL1 LABEL FORMAT

Character Position	Field Name	Length	Initialization Value
000	Label Identifier	3	'VOL'
003	Label Number	1	1
004	Volume Identifier	6	user id
010	Accessibility	1	space
011	Reserved	26	spaces
037	Owner ID	14	spaces
051	Reserved	20	spaces
071	Volume Surface Indicator (two-sided disk only)	1	space
074	Reserved	3	space
075	Physical Record Length	1	space
076	Physical Record Sequence Code	2	spaces
078	Reserved	1	space
079	Label-Standard Version	1	'W'

HDR1 LABEL FORMAT

Character Position	Field Name	Length	Initialized Value
000	Label Identifier	3	'HDR'
003	Label Number	1	1
004	Reserved	1	space
005	File ID	17	8 char DSNs + 9 blanks
022	Block Length	5	00128
027	Record Attribute	1	space
028	Beginning of Extent	5	cchss
033	Physical Record Length	1	space
034	End of Extent	5	cchss
039	Record/Block Format	1	space
040	Bypass Indicator	1	space
041	File Security	1	space
042	Write Protect Indicator	1	space
043	Exchange Type Indicator	1	space
044	Multi-Volume File	1	space
045	Volume Sequence Indicator	2	space
047	Creation Date	6	space
053	Record Length	4	space
057	Offset To Next Record Space	5	space
062	Reserved	4	space
066	Expiration Date	6	space
072	Verify/Copy Indicator	1	space
073	File Organization	1	space
074	End of Data Address	5	cchss
079	Reserved	1	space

The initialized diskette that this utility produces is formatted as a basic exchange diskette, with a VOLID that you specify. The portion of the diskette that is available for your use (cylinders 1—74) is a basic exchange EBCDIC data file. It is specified by the first HDR1 record (at cylinder 0, head 0, sector 8). The basic exchange data file has these characteristics:

• The data file is organized sequentially.
• A record is 128 bytes long.
• Records are in fixed-length format and are unblocked and unspanned.
• The physical record length is 128 bytes.
• The data file identifier (HDR1) is a simple name, containing up to 8 characters.
• All character data is represented in EBCDIC. ASCII is not supported.

HOW TO USE IT

Press the LOAD key. After the EXEC= message is printed at the operator station, enter either RI or the starting sector address (ccchss) of the utility. When it is loaded, the utility responds with:

```
RIOOOI  DISKETTE  INITIALIZATION  STARTED
```

The utility issues this prompt requesting the diskette device address:

```
RI110A  DEVICE  ADDRESS=
```

Enter the information in this form:

```
ddd
```

where ddd is the device address, in decimal. This number must be in the range 0–127. If the diskette already has a VOLID, the utility responds with:

```
RI125I  CURRENT  VOLID=  cccccc
```

where cccccc is the name of the current VOLID on the diskette. The utility issues a prompt asking whether or not to proceed with initializing this diskette:

```
RI127A  DO  YOU  WANT  TO  INITIALIZE  THIS  DISKETTE?
RESPOND  YES  OR  NO
```

If you respond NO, the utility issues a cycle terminated message and recycles to the RI110A message. If you respond YES, the utility issues this prompt requesting the name of your volume:

```
RI120A  NEW  VOLID=
```

Enter the VOLID you want on your volume in this form:

```
cccccc
```

where cccccc is a 1-to 6-character alphameric name.

If the information you entered is correct the utility does the initialization.

THE OUTPUT YOU RECEIVE

This utility produces an initialized diskette in *basic exchange format* (one that is interchangeable with other systems). If any defective cylinders are encountered, the utility issues this message, one for each defective cylinder, in the following form:

> RI140I DEFECTIVE CYLINDER cch

where cch is the number of the defective cylinder and h is the head number. The utility prints this message to indicate that it has finished:

> RI001I DISKETTE INITIALIZATION COMPLETED

HOW TO HANDLE ERRORS

If the utility encounters a recoverable error, it prints an error message and reissues the prompt. Recoverable errors are:

- Device address not valid
- Device at specified device address not diskette device
- Invalid VOLID/header name
- Cylinder 0 defective
- Unable to initialize because there are too many defective cylinders (two cylinders is the maximum)

If the utility encounters an unrecoverable I/O error, it abnormally terminates. To reinvoke the initialization utility, you must reIPL.

EXAMPLE

The following example shows a typical initialization, where the diskette device address is 002, the user's new VOLID is VOL001, and the old VOLID is VOL999.

Operator Station Printout	Explanation
IP100A EXEC=	The loader issues a request for the program that is to be loaded.
RI	You enter the name of the Diskette Initialization utility.
FI000I DISKETTE INITIALIZATION STARTED	The Diskette Initialization utility has started.
RI110A DEVICE ADDRESS=	The utility issues a request for the device address of the Diskette.
002	The diskette is at device address 002.
RI125I CURRENT VOLID = VOL999	The current name of your diskette is VOL999.
RI127A DO YOU WANT TO INITIALIZE THIS DISKETTE? RESPOND YES OR NO	This prompt asks you if you wish to continue to initialize this diskette.
YES	You respond YES to continue.
RI120A NEW VOLID=	The utility issues a request for you to supply the new VOLID.
VOL001	The new name of your diskette is VOL001.
RI140I DEFECTIVE CYLINDER 110	These two cylinders have bad sectors.
RI140I DEFECTIVE CYLINDER 270	This message is not printed if all cylinders are good.
RI001I DISKETTE INITIALIZATION COMPLETED	The diskette is initialized.

Disk Initialization (FI)

WHAT THIS UTILITY DOES

This utility has two initialization types—*primary initialization* and *alternate sector assignment*.

Use primary initialization for complete initialization when the disk is installed or when complete reinitialization is desired. It first verifies and corrects sector IDs, and then analyzes the disk surface to find defective sectors. When it finds a defective sector, it assigns an alternate sector on cylinder 1, then prints a message at the operator station.

Alternate sector assignment lets you assign alternate sectors for those sectors found to be defective. It also tries to move data from the defective sector to the alternate.

Note. Because there are only 120 alternate sectors available, and because once an alternate has been assigned, the defective sector cannot be recovered unless you specify that all sector IDs are to be rewritten during initialization. Therefore, use alternate sector assignment only when necessary.

If you try to initialize a disk that has been previously initialized, you destroy all data on the disk. Reinitialization rewrites the complete disk surface.

HOW TO USE IT

Press the LOAD key. After the EXEC= message is printed at the operator station, enter either FI or the starting sector address (ccchss) of the utility. When it is loaded, the utility responds with:

```
FI000I DISK INITIALIZATION STARTED
```

The utility then issues this prompt requesting the device address of the disk to be initialized.

```
FI110A DEVICE ADDRESS=
```

Enter the requested information in this form:

```
ddd
```

where ddd is the disk device address. This number must be in decimal, in the range 0–255.

The utility then issues this prompt requesting the type of initialization you want to perform:

```
FI120A TYPE=
```

Enter the requested information in this form:

```
tt
```

where tt is the initialization type. Enter PI for primary initialization, or AS for alternate sector assignment. The utility's next action depends on the initialization type you entered. If you entered PI, the utility issues this prompt requesting you to specify whether the defective sector flags are invalid:

```
FI003I PRIMARY INITIALIZATION MODE
FI150A ARE DEFECTIVE SECTOR FLAGS INVALID
```

Enter either YES or NO. If you respond YES, the utility rewrites all sector IDs and reinitializes the flag byte, where possible. If you reply NO, the defective sector flag bit of each sector ID is retained.

Note. You should respond YES only if you want to rewrite all the sector IDs. Rewriting the sector IDs causes the loss of the IBM assigned defective sector flags.

If you entered AS, the utility issues this prompt requesting you to specify the defective sector address:

```
FI004I  ALTERNATE  SECTOR  MODE
FI130A  SECTOR  ADDRESS=
```

Enter the requested information in this form:

```
ccchss
```

where ccchss is the address of a sector that you have found to be defective. The utility assigns an alternate sector on cylinder 1 and then tries to move the data from the defective sector onto the alternate.

THE OUTPUT YOU RECEIVE

If you request primary initialization, the utility prints a message for each defective sector it finds. The message looks like this:

```
FI140I  ALTERNATE  SECTOR  ASSIGNED  FOR  ccchss
```

where ccchss is the address of the defective sector. A successful assignment of an alternate in AS mode prints the same message. When the utility has finished either type of initialization, it prints this message:

```
FI001I  DISK  INITIALIZATION  COMPLETED
```

HOW TO HANDLE ERRORS

If the utility encounters a recoverable error, while processing your input to the operator station, it prints an error message and reissues the prompt. Recoverable errors are:

- Device address not valid (for example, defective character, out of range, not 3 characters)
- Device at specified device address not a disk device
- Invalid initialization type—must be either AS or PI
- Invalid sector address (for example, out of disk range, invalid character, not 6 characters)
- Invalid response to sector flag prompt

The following error types cause a warning message, but allow for normal program completion without any response from you.

- Unable to recover data in alternate sector mode
- Unable to write sector ID
- Defective sector on cylinder 1

If the utility encounters one of the following three unrecoverable errors, it abnormally terminates. To reinvoke the initialization utility, you must reIPL.

- Unable to assign an alternate sector because alternate cylinder is full
- Unable to initialize because there are too many defective sectors (the maximum is 120 sectors)
- Unrecoverable I/O error
- Attempt to assign alternate for defective sector on cylinder 1
- Unexpected or invalid return codes from external system routines

EXAMPLES

The following example shows a typical primary initialization session for a disk at device address 075.

Operator Station Printout	Explanation
IP100A EXEC=	The loader issues a request for the program that is to be executed.
FI	You enter the name of the Disk Initialization utility.
FI000I DISK INITIALIZATION STARTED	The disk initialization utility started.
FI110A DEVICE ADDRESS=	The utility issues a request for the device address of the disk to be initialized.
075	The disk is at device address 075.
FI120A TYPE=	The utility issues a request for the type of initialization you want.
PI	You request a primary initialization.
FI003I PRIMARY INITIALIZATION MODE	The utility enter primary mode.
FI150A ARE DEFECTIVE SECTOR FLAGS INVALID	The utility issues a request to find if the defective flags are invalid.
NO	You specify that the defective sector flags are valid.
FI140I ALTERNATE SECTOR ASSIGNED FOR 240120	The utility assigned alternate sectors for defective sectors 240120 and 240140.
FI140I ALTERNATE SECTOR ASSIGNED FOR 240140	
FI001I DISK INITIALIZATION COMPLETED	The utility is finished.

The next example shows a typical alternate sector assignment session.

Operator Station Printout	Explanation
IP100A EXEC=	The loader issues a request for the program that is to be executed.
ccchss	You enter the starting sector address of the Disk Initialization utility.
FI000I DISK INITIALIZATION STARTED	The Disk Initialization has started.
FI110A DEVICE ADDRESS=	The utility requests the device address of the Disk to be initialized.
003	The disk is at device address 003.
FI120A TYPE=	The utility issues a request for the type of initialization you want.
AS	You request alternate sector assignment.
FI004I ALTERNATE SECTOR MODE	The utility issues a message telling you that alternate sector assignment is ready.
FI130A SECTOR ADDRESS=	The utility issues a request for the sector you want an alternate assigned for.
100037	The defective sector is sector 100037.
FI140 ALTERNATE SECTOR ASSIGNED	The utility issues a message that the sector assignment is successful.
FI001I DISK INITIALIZATION COMPLETED	The utility is finished.

Create Diskette HDR1 (CH)

WHAT THIS UTILITY DOES

Using information that you supply, this utility creates a basic exchange HDR1 record for a diskette data file. If you want to create a HDR1 of any other format, see the *IBM General Information Manual*, GA21-9182-1.

If the diskette initialization utility initialized the diskette, the HDR1 describing the extents of the entire diskette must be deleted before the utility can create any additional HDR1s.

HOW TO USE IT

Press the LOAD key. After the EXEC= message is printed at the operator station, enter either CH or the starting sector address (ccchss) of the utility. After it is loaded, the utility issues this message:

```
CH000I CREATE HDR1 UTILITY STARTED
```

The utility then issues this prompt requesting the diskette device address:

```
CH110A DEVICE ADDRESS=
```

Enter the requested information in this form:

```
ddd
```

where ddd is the diskette device address, in decimal. This number must be in the range 0–127.

The utility issues this prompt requesting the name of your data file described by the HDR1 record.

```
CH120A HEADER NAME=
```

Enter the requested information in this form:

```
ccccccc
```

where ccccccc is a 1-to 8-character alphameric name. The utility issues this prompt requesting the starting and ending sector addresses of the data file to be defined by this HDR1 record.

```
CH130A EXTENTS=
```

Enter the information in this form:

```
ccchss,ccchss
```

where ccchss,ccchss are the starting and ending sector addresses of the next data file. The utility issues this prompt requesting the address, within the data file, to write the last data item.

```
CH140A END OF FILE
```

Enter the information in this form:

```
ccchss
```

where ccchss is the address of the next sector in the data file available for data. If you enter the information correctly the utility creates the HDR1 record.

THE OUTPUT YOU RECEIVE

This utility writes a HDR1 record to the diskette. When the utility has finished successfully, it prints this message:

```
CH001I CREATE HDR1 UTILITY COMPLETED
```

When the utility completes unsuccessfully, an error message is printed along with the following message:

```
CH001E CREATE HDR1 ABNORMAL CYCLE END
```

The utility then initiates another CREATE operation by reissuing the DEVICE ADDRESS= prompt. The utility continues in this mode until you terminate it by pressing the LOAD key. The following is a description of the HDR1 fields that will be initialized by this utility.

Character Position	Field Name	Length	Initialized Value
000	Label Identifier	3	'HDR'
003	Label Number	1	1
004	Reserved	1	space
005	Data File ID	17	8 char.*DSNs + 9 blanks
022	Block Length	5	00128
027	Record Attribute	1	space
028	Beginning of Extent	5	cchss*
033	Physical Record Length	1	space
034	End Of Extent	5	cchss*
039	Record/Block Format	1	space
040	Bypass Indicator	1	space
041	Data File Security	1	space
042	Write Protect Indicator	1	space
043	Exchange Type Indicator	1	space
044	Multi-Volume Data File	1	space
045	Volume Sequence Indicator	2	space
047	Creation Date	6	space
053	Record Length	4	space
057	Offset To Next Record Space	5	space
062	Reserved	4	space
066	Expiration Date	6	space
072	Verify/Copy Indicator	1	space
073	Data File Organization	1	space
074	End Of Data Address	5	cchss*
079	Reserved	1	space

*—This is the data you entered

HOW TO HANDLE ERRORS

If the utility encounters a recoverable error, it prints an error message and reissues the prompt. Recoverable errors are:

- Invalid ccchss
- Wrong number of arguments
- Device at specified device address not a diskette device
- End of file address you specified not within the data extents
- Data file extents in conflict with each other
- Invalid data file name
- Invalid device address
- Extents not in basic exchange data area

If the utility encounters an unrecoverable error, it abnormally terminates the CREATE operation with an abnormal cycle end message. The utility then recycles to the prompt for the device address. The unrecoverable errors are:

- Data file overlaps an existing data file
- No available HDR1s
- Extent arrangement indicator incompatible with the data file extents requested
- Name you entered duplicates one that already exists on the volume
- Unrecoverable I/O error
- VOLID is not compatible with the basic exchange data file
- Invalid HDR1 on diskette

EXAMPLE

The following example shows a typical create HDR1 session:

Operator Station Printout	Explanation
IP100A EXEC=	The loader issues a request for the program that is to be executed.
CH	You enter the name of the Create HDR1 utility.
CH000I CREATE HDR1 UTILITY STARTED	The Create HDR1 utility has started.
CH110A DEVICE ADDRESS=	The utility issues a request for the device address of the diskette.
050	The Diskette is at device address 050.
CH120A HEADER NAME=	The utility issues a request for the name you want to give your HDR1 record.
VOLDATA2	You enter VOLDATA2.
CH130A EXTENTS=	The utility issues a request for where you want to locate your data file.
037015,038025	The data file extends from sector 037015 to sector 038025.
CH140A END OF FILE=	Enter the sector address of the last data item.
038001	The data ends at sector 038001.
CH001I CREATE HDR1 UTILITY COMPLETED	The HDR1 record is created.
CH110A DEVICE ADDRESS=	This prompt initiates another CREATE operation.

Delete Diskette HDR1 (DH)

WHAT THIS UTILITY DOES

This utility deletes the HDR1 record for a specified data file and rewrites it as unused.

HOW TO USE IT

Press the LOAD Key. After the EXEC= message is printed at the operator station, enter either DH or the starting sector address (ccchss) of the utility. When it is loaded, the utility issues this message:

```
DH000I DELETE HDR1 UTILITY STARTED
```

The utility then issues this prompt requesting the diskette device address:

```
DH110A DEVICE ADDRESS=
```

Enter the requested information in the following form:

```
ddd
```

where ddd is a 3-digit decimal number in the range 0–127. The utility enters this prompt requesting the name of the HDR1 record you want to delete:

```
DH120A HEADER NAME=
```

Enter the information in this form:

```
ccccccc
```

where ccccccc is a 1-to 8-character alphameric name. If the information you enter is correct, and there are no other errors, the utility deletes the HDR1.

THE OUTPUT YOU RECEIVE

This utility rewrites the HDR1 record as unused. When the utility has successfully finished, it prints:

```
DH001I DELETE HDR1 UTILITY COMPLETED
```

or if the utility is unsuccessful, it prints:

```
DH001E DELETE HDR1 CYCLE ERROR END
```

The utility then initiates another DELETE HDR1 operation, and reissues the DEVICE ADDRESS= prompt. The utility will continue in this mode until you press the LOAD key.

HOW TO HANDLE ERRORS

If the utility encounters a recoverable error, it prints an error message and reissues the prompt. Recoverable errors are:

- Invalid device address
- Device at specified device address not a diskette device
- Invalid data file name

If the utility encounters an unrecoverable error, it abnormally terminates the delete cycle. The utility then recycles to the prompt for the device address. The unrecoverable errors are:

- Extent arrangement indicator incompatible with the data file extents to be deleted
- HDR1 name not found
- Unrecoverable I/O error
- VOLID incompatible for basic exchange data sets
- Invalid HDR1 on diskette

EXAMPLE

The following example shows a typical delete HDR1 session:

Operator Station Printout	Explanation
IP100A EXEC=	The loader issues a request for the program that is to be executed.
DH	You enter the name of the Delete HDR1 utility.
DH000I DELETE UTILITY HDR1 STARTED	The Delete HDR1 utility has started.
DH110A DEVICE ADDRESS=	The utility requests the device address of the Diskette.
002	The Diskette is at device address 002.
DH120A HEADER NAME=	The utility issues a request for the name of the HDR1 record you want deleted.
VOLDATA2	The name of the HDR1 record is VOLDATA2.
DH001I DELETE HDR1 UTILITY COMPLETED	The HDR1 record is deleted.
DH110A DEVICE ADDRESS=	The utility initiates another DELETE HDR1 operation.

Diskette To Disk Copy (RF)
WHAT THIS UTILITY DOES

After you load this utility, it copies a specified data file from a diskette to a disk. There are two diskette sectors per disk sector.

HOW TO USE IT

Press the LOAD key. After the EXEC= message is printed at the operator station, enter either RF or the starting sector address (ccchss) of this utility. When it is loaded, the utility responds with:

> RF000I DISKETTE TO DISK COPY STARTED

The utility issues this prompt for the source data file information:

> RF100A FROM DATA AREA=

Enter the information in this form:

> ddd,ccchss,ccchss

where:

ddd	= the diskette device address in decimal
ccchss,ccchss	= the starting and ending sector addresses
	delimiting the location of the data file information to be copied from the diskette

The utility issues this prompt for the destination data file information:

> RF200A TO DATA AREA=

Enter the information in this form:

> ddd,ccchss,ccchss

where:

ddd	= the disk device address in decimal
ccchss,ccchss	= the starting and ending sector addresses delimiting the location on disk into which the data file information is to be copied

If there are no errors, the utility checks the size of the destination data file. If the destination data file is too small, the utility issues an error message and recycles; otherwise, it performs the copy as you requested. If you copy an odd number of diskette sectors, the utility pads (with zeros) the last 128 bytes of the last disk sector written. Once the copy is completed, a completion message is written at the operator station and followed by another prompt for source data file information. The utility will continue in this mode until you terminate it in some manner (for example, by pressing the LOAD key).

THE OUTPUT YOU RECEIVE

When this utility has finished copying the information you requested, it prints this message at the operator station:

```
RF099I LAST SECTOR WRITTEN = ccchss
```

where:

ccchss = the last sector written on the disk.

After that message, it prints:

```
RF001I DISKETTE TO DISK COPY COMPLETED
```

This indicates that the copy is completed. The utility then reissues the FROM DATA AREA= prompt.

HOW TO HANDLE ERRORS

If the utility encounters a recoverable error, it prints an error message and reissues the prompt. Recoverable errors are:

- Response parameter too short or too long
- Response does not have three parameters
- Invalid device address (negative number, non-decimal digits, or greater than 255)
- Device at specified device address not diskette device (for source) or disk device (for destination)
- Invalid sector address (out of range, non-decimal digits, or wrong number of characters)
- Starting sector address greater than ending sector address
- Source data file larger than the destination data file

If the utility encounters an unrecoverable I/O error to the disk or diskette, it abnormally terminates the cycle with an error message and reissues the FROM DATA AREA= prompt. If an unrecoverable error occurs at the operator station, the utility terminates.

EXAMPLE

The following is an example of the diskette to disk copy utility. The diskette device address is 002, with starting sector address 037015 and ending sector address 037125. The disk device address is 003, with starting sector address 240120 and ending sector address 240140.

Operator Station Printout	Explanation
IP100A EXEC=	The loader issues a request for the program that is to be executed.
RF	You enter the name of the Diskette to Disk Copy utility.
RF000I DISKETTE TO DISK COPY STARTED	The Diskette to Disk Copy utility has started.
RF100A FROM DATA AREA=	The utility prompts for the source data file information.
003,037015,037125	You enter the device address, starting sector address, and the ending sector address for the source data file information.
RF007A INCORRECT DEVICE TYPE– MUST BE DISKETTE	The device type is incorrect.
RF100A FROM DATA AREA=-	The utility reissues the prompt for the source data file information.
002,037015,037125	You enter the correct device address, starting sector address, and ending sector address for the source data file information.
RF200A TO DATA AREA=	The utility issues this prompt for the destination data file information.
003,240120,240140	You enter the device address, starting sector address, and ending sector address for the destination data file.
RF099I LAST SECTOR WRITTEN IS 240138	The address of the last sector written on the disk.
RF001I DISKETTE TO DISK COPY COMPLETED	The copy was successfully completed.
RF100A FROM DATA AREA=	The utility prompts for a new source data file for the next copy function.

Disk To Diskette Copy (FR)

WHAT THIS UTILITY DOES

After you load this utility, it copies a specified data file from a disk to a diskette. There are two diskette sectors per disk sector.

HOW TO USE IT

Press the LOAD key. After the EXEC= message is printed at the operator station, enter either FR or the starting sector address (ccchss) of the utility. When it is loaded, the utility responds with:

```
FR000I DISK TO DISKETTE COPY STARTED
```

The utility issues this prompt for the source data file information:

```
FR100A FROM DATA AREA=
```

Enter the information in this form:

```
ddd,ccchss,ccchss
```

where:

ddd	=	the disk device address in decimal
ccchss,ccchss	=	the starting and ending sector addresses delimiting the location of the data file information to be copied from the disk

The utility issues this prompt for the destination data file information:

```
FR200A TO DATA AREA=
```

Enter the information in this form:

```
ddd,ccchss,ccchss
```

where:

ddd	=	the diskette device address in decimal
ccchss,ccchss	=	the starting and ending sector addresses delimiting the location on the diskette into which the data file information is to be copied

If there are no errors, the utility checks the size of the destination data file. If the destination data file is too small, the utility issues an error message and recycles. Otherwise, it performs the copy as you requested. Once the copy is completed, a completion message will be written at the operator station and followed by another prompt requesting source data file information. The utility will continue in this mode until you terminate it in some manner (for example, by pressing the LOAD key).

THE OUTPUT YOU RECEIVE

When this utility has finished copying the information you requested, it prints this message at the operator station:

> FR0991 LAST SECTOR WRITTEN = ccchss

where:

ccchss   = the last sector written on the diskette

After that message, it prints:

> FR0011 DISK TO DISKETTE COPY COMPLETED

This indicates that the copy is completed. The utility then reissues the FROM DATA AREA= prompt.

HOW TO HANDLE ERRORS

If the utility encounters a recoverable error, it prints an error message and reissues the prompt. Recoverable errors are:

- Response parameter too short or too long
- Response does not have three parameters
- Invalid device address (negative number, non-decimal digits, or greater than 255)
- Device at the specified device address not a disk device (for source) or diskette device (for destination)
- Invalid sector address (out of range, non-decimal digits or wrong number of characters)
- Starting sector address greater than ending sector address
- Source data file larger than destination data file

If the utility encounters an unrecoverable I/O error to the disk or diskette, it abnormally terminates the cycle with an error message and reissues the FROM DATA AREA= prompt.

If an unrecoverable I/O error occurs at the operator station, the utility terminates.

EXAMPLE

The following is an example of the disk to diskette copy utility. The disk device address is 003, with starting sector address 240120 and ending sector address 240140. The diskette device address is 002, with starting sector address 037015 and ending sector address 039010.

Operator Station Printout	Explanation
IP100A EXEC=	The loader issues a request for the program that is to be executed.
FR	You enter the name of the Disk to Diskette Copy utility.
FR000I DISK TO DISKETTE COPY STARTED	The Disk to Diskette Copy utility has started.
FR100A FROM DATA AREA=	The utility prompts for the source data file information.
003,240120,240140	You enter the device address, starting sector address, and the ending sector address for the source data file information.
FR200A TO DATA AREA=	The utility issues this prompt for the destination data file information.
002,039010,037015	You enter the device address, starting sector address and the ending sector address for the destination data file information.
FR016A END SECTOR LESS THAN START SECTOR	The information entered is incorrect.
FR200A TO DATA AREA=	The utility reissues the prompt for the destination data file information.
002,037015,039010	You enter the correct device address, starting sector address, and ending sector address for the destination data file.
FR099I LAST SECTOR WRITTEN IS 038004	The utility prints the address of the last sector written on the diskette.
FR001I DISK TO DISKETTE COPY COMPLETED	The copy was successfully completed.
FR100A FROM DATA AREA=	The utility prompts for a new source data file for the next copy operation.

Diskette To Printer Dump (RD)

WHAT THIS UTILITY DOES

This utility dumps the contents of a specified data file from the diskette on the printer.

HOW TO USE IT

Press the LOAD key. After the EXEC= message is printed at the operator station, enter either RD or the starting sector address (ccchss) of the utility. When it is loaded, the utility prints this message at the operator station:

```
RD000I DISKETTE TO PRINTER DUMP STARTED
```

The utility prints this prompt for the location of the data file information to be dumped from the diskette:

```
RD100A DISK AREA=
```

Enter the requested information in this form:

```
ddd,ccchss,ccchss
```

where:

ddd = the diskette device address in decimal

ccchss,ccchss = the starting and ending sector addresses delimiting the location of the data file information to be dumped from the diskette.

If there are no errors, the utility dumps the requested data file information on the printer. You may stop the dump by causing an interrupt from the operator station. To do this, hold down the CTRL key, then press the A key. This causes the dump to stop at the end of a print line, print an abnormal recycle message, and reprompt for new input. Once the dump operation is finished, a completion message is written at the operator station and followed by a prompt for the next source data file information to be dumped. The utility continues in this mode until you terminate it in some manner (for example, by pressing the LOAD key).

THE OUTPUT YOU RECEIVE

This utility dumps the contents of a specified data file from the diskette on the printer. The dump is in hexadecimal with columns of EBCDIC translation to the right of the page and is formatted by sectors in the following manner:

```
ccchss  xxxx xxxx<----12 words---->xxxx xxxx  yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy
        xxxx xxxx<----12 words---->xxxx xxxx  yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy
        xxxx xxxx<----12 words---->xxxx xxxx  yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy
        xxxx xxxx<----12 words---->xxxx xxxx  yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy
```

where:

ccchss = the sector address of the data on the diskette

xxxx = the contents of the diskette sector in hexadecimal

yyyy = the contents of the diskette sector in EBCDIC

If the utility encounters a deleted header record on cylinder 0 sectors 9-26, head 0 or sectors 1-26, head 1, it prints the message PHYSICAL RECORD HAS BEEN LOGICALLY DELETED on the printer. The message is preceded by the ccchss address. When the dump is finished, the utility issues this message at the operator station:

```
RD001I DISKETTE TO PRINTER DUMP COMPLETED
```

It then reissues the DISK AREA= prompt.

HOW TO HANDLE ERRORS

If the utility encounters a recoverable error, it prints an error message and reissues the prompt. Recoverable errors are:

- Response to prompt does not have three parameters
- Invalid device address
- Device at the specified device address not a diskette device
- Invalid sector address
- Starting sector address greater than ending sector address

If the utility encounters an unrecoverable diskette device I/O error, it abnormally terminates and reissues the DISK AREA= prompt. If the utility encounters an unrecoverable operator station or printer I/O error, it terminates.

EXAMPLE

The following is an example of a dump from the diskette on the printer. The diskette device address is 002 with a starting sector address of 030015 and an ending sector address of 030016.

Operator Station Printout	*Explanation*
IP100A EXEC=	The loader issues a request for the program that is to be executed.
RD	You enter the name of the Diskette to Printer Dump utility.
RD000I DISKETTE TO PRINTER DUMP STARTED	The Diskette to Printer dump has started.
RD100A DISK AREA=	The utility prompts for the disk sectors to be dumped.
F02,030015,030016	You enter the device address, starting sector address, and ending sector address for the dump.
RD004A INVALID DEVICE ADDRESS– NON-DECIMAL DIGIT	The device address is incorrect.
RD100A DISK AREA=	The utility reissues a prompt for the disk sectors to be dumped.
002,030015,030016	You enter the correct address for the disk.
RD001I DISKETTE TO PRINTER DUMP COMPLETED	The dump was successfully completed.
RD100A DISK AREA=	The utility prompts for the next data file to be dumped.

Disk To Printer Dump (FD)

WHAT THIS UTILITY DOES

This utility dumps the contents of a specified data file from the disk on the printer.

HOW TO USE IT

Press the LOAD key. After the EXEC= message is printed at the operator station, enter either FD or the starting sector address (ccchss) of the utility. When it is loaded, the utility prints this message at the operator station:

```
FD0001 DISK TO PRINTER DUMP STARTED
```

The utility prints this prompt for the location of the data file information to be dumped from the disk:

```
FD100A DISK AREA=
```

Enter the requested information in this form:

```
ddd,ccchss,ccchss
```

where:

ddd   = the disk device address in decimal

ccchss,ccchss   = starting and ending sector addresses delimiting the location of the data file information to be dumped from the disk

If there are no errors, the utility dumps the requested data file information on the printer. You may stop the dump by causing an interrupt from the operator station. To do this, hold down the CTRL key, then press the A key. This causes the dump to stop at the end of a print line, print an abnormal recycle message, and reprompt for new input. Once the dump operation is completed, a completion message is written at the operator station and followed by a prompt for the next source data file information to be dumped. The utility continues in this mode until you terminate it in some manner (for example, by pressing the LOAD key).

THE OUTPUT YOU RECEIVE

This utility dumps the contents of a specified data file on the printer. The dump is in hexadecimal with columns of EBCDIC translation to the right of the page and is formatted by sectors in the following manner:

```
xxxx xxxx<— 12 words —>xxxx xxxx  yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy
xxxx xxxx<— 12 words —>xxxx xxxx  yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy
xxxx xxxx<— 12 words —>xxxx xxxx  yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy
xxxx xxxx<— 12 words —>xxxx xxxx  yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy
xxxx xxxx<—— 12 words —>xxxx xxxx  yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy
xxxx xxxx<— 12 words —>xxxx xxxx  yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy
xxxx xxxx<— 12 words —>xxxx xxxx  yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy
xxxx xxxx<— 12 words —>xxxx xxxx  yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy
```

where:

ccchss	= the sector address of the data file on the disk
xxxx	= the contents of the disk sector in hexadecimal
yyyy	= the contents of the disk sector in EBCDIC

When the dump is finished, the utility issues this message at the operator station:

```
FD001A DISK TO PRINTER DUMP COMPLETED
```

It then reissues the DISK AREA= prompt.

HOW TO HANDLE ERRORS

If the utility encounters a recoverable error, it prints an error message and reissues the prompt. Recoverable errors are:

- Response to the prompt does not have three parameters
- Invalid device address
- Device at specified device address not disk device
- Invalid sector address
- Starting sector address greater than ending sector address

If the utility encounters an unrecoverable disk I/O error, it abnormally terminates and reissues the DISK AREA= prompt. If the utility encounters an unrecoverable operation station or printer I/O error, it terminates.

EXAMPLE

The following is an example of a dump from the disk on the printer. The disk device address is 003, with a starting sector address of 200130 and an ending sector address of 200131.

Operator Station Printout	Explanation
IP100A EXEC=	The loader issues a request for the program that is to be executed.
FD	You enter the name of the Disk to Printer Dump utility.
FD0001 DISK TO PRINTER DUMP STARTED	The Disk to Printer Dump utility has started.
FD100A DISK AREA=	The utility prompts for the disk sectors to be dumped.
F03,200130,200131	You enter device address, starting sector address, and ending sector address for the dump.
FD004A INVALID DEVICE ADDRESS— NON DECIMAL DIGIT	The device address is incorrect.
FD100A DISK AREA=	The utility reissues a prompt for the disk sectors to be dumped.
003,200130,200131	You enter the correct address for the disk.
FD001I DISK TO PRINTER DUMP COMPLETED	The dump was successfully completed.
FD100A DISK AREA=	The utility prompts for the next data file to be dumped.

Diskette Patch (TR)

WHAT THIS UTILITY DOES

This utility applies a patch which you enter at the operator station to a specified area on the diskette.

HOW TO USE IT

Press the LOAD key. After the EXEC= message is printed at the operator station, enter either TR or the starting sector address (ccchss) of this utility. When it is loaded, the utility responds with:

```
TR000I DISKETTE PATCH STARTED
```

The utility issues this prompt for the location on the diskette you want to patch:

```
TR200A PATCH AREA=
```

Enter the requested information in the following form:

```
ddd,ccchss,bbb,nnn
```

where:

ddd	= the diskette device address in decimal, in the range 0–127
ccchss	= the sector address of the area to be patched
bbb	= the byte displacement in decimal, within the sector, where you want the patch to start
nnn	= the number of bytes you want displayed for verification before the patch is applied
	This number must not exceed 128. All bytes printed for verification must be within the boundaries of the sector you specified; that is, the sum of bbb + nnn must be less than 129.

If there are no errors, the utility prints the bytes that you requested for verification and then prints this prompt on the next line:

```
TR201A REPLACEMENT DATA=
```

If the bytes printed for verification do not begin with the bytes you want to patch, enter this response:

```
NONE
```

The utility responds:

```
TR001I DISKETTE PATCH COMPLETED
```

It then reissues the PATCH AREA= prompt.

If the bytes printed for verification begin with the ones you want to patch, enter the patch in the following form:

```
hhhh hhhh hhhh ...
```

where:

hhhh hhhh hhhh . . .   are groups of four hexadecimal characters, separated by blanks

The length of the patch must be in the range of 1 to 128 bytes. The entire patch must be within the boundaries of the sector you specified. Note that the length of the patch does not have to equal the value you specified for nnn (the byte verification count).

If there are no errors, the patch is applied.

The utility responds with:

```
TR001I DISKETTE PATCH COMPLETED
```

The utility issues the completion message which is followed by the prompt for the next patch. The utility continues in this mode until you terminate it by pressing the LOAD key.

THE OUTPUT YOU RECEIVE

The output from this utility are prompt messages from the utility and the data for the requested patch to diskette.

HOW TO HANDLE ERRORS

If a recoverable error occurs, the utility prints an appropriate error message and then reissues the prompt. Recoverable errors are:

- Syntax error in your response to a prompt
- Device at specified device address not a diskette
- Sector address not a valid address for diskette
- Displacement not within the boundaries of the sector you specified
- Number of bytes to be displayed either exceeds 128 or less than or equal to zero

If an unrecoverable diskette I/O error occurs, the utility abnormally terminates. A terminal error occurs when an I/O error prevents the utility from printing a message at the operator station.

EXAMPLE

The following example shows what happens when you apply a patch to the diskette.

Operator Station Printout	Explanation
IP100A EXEC=	The loader issues a request for the program that is to be executed.
TR	You enter the name of the Diskette Patch utility.
TR000I DISKETTE PATCH STARTED	The Diskette Patch utility has started.
TR200A PATCH AREA=	The utility issues a request for the address of the location to be patched.
02, 003003, 24, 08	You enter the device address, sector address, byte displacement, and byte verification count.
TR003A INVALID DEVICE ADDRESS— 3 DIGITS REQUIRED	The device address is incorrect.
TR200A PATCH AREA=	The utility reissues the prompt for the address of the location to be patched.
002, 003003, 24, 08	You enter the correct device address, sector address, byte displacement, and byte verification count.
TR101A INVALID DISPLACEMENT— 3 DIGITS REQUIRED	The byte displacement is incorrect.
TR200A PATCH AREA=	The utility reissues the prompt for the address of the location to be patched.
002,003003, 024, 08	You enter the device address, sector address, correct byte displacement, and byte verification count.
TR105A INVALID BYTE VERIFICATION COUNT—3 DIGITS REQUIRED	The byte verification count is incorrect.
TR200A PATCH AREA=	The utility reissues the prompt for the address of the location to be patched.
002, 003003, 024, 008	You enter the device address, sector address, byte displacement, and the correct byte verification count.
000A 123B 0101 A00C	These are the 8 bytes requested for verification.
TR201A REPLACEMENT DATA=	The utility issues a request for you to enter a patch or cancel this particular patch operation.
NONE	No patch is to be applied.
TR001I DISKETTE PATCH COMPLETED	The patch cycle was successfully completed.
TR200A PATCH AREA=	The utility prompts for the next patch cycle.

Disk Patch (TF)

WHAT THIS UTILITY DOES

This utility applies a patch which you enter at the operator station to a specified area on the disk.

HOW TO USE IT

Press the LOAD key. After the EXEC= message is printed at the operator station, enter either TF or the starting sector address (ccchss) of this utility. When it is loaded, the utility issues this message:

```
TF000I DISK PATCH STARTED
```

The utility issues this prompt for the location on the disk you want to patch:

```
TF200A PATCH AREA=
```

Enter the requested information in the following form:

```
ddd,ccchss,bbb,nnn
```

where:

ddd	=	the disk device address in decimal in the range 0–255
ccchss	=	the sector address of the area to be patched
bbb	=	the byte displacement in decimal, within the sector, where you want the patch to start
nnn	=	the number of bytes you want displayed for verification before the patch is applied

This number must not exceed 256. All bytes printed for verification must be within the boundaries of the sector you specified; that is, the sum of bbb + nnn must be less than 257.

If there are no errors, the utility prints the bytes that you requested for verification and then prints this prompt on the next line:

```
TF201A REPLACEMENT DATA=
```

If the bytes printed for verification do not begin with the bytes you want to patch, enter this response:

```
NONE
```

The utility responds with:

```
TF001I DISK PATCH COMPLETED
```

It then reissues the PATCH AREA= prompt. If the bytes printed for verification begin with the ones you want to patch, enter the patch in the following form:

```
hhhh hhhh hhhh ...
```

where:

hhhh hhhh hhhh ....   are groups of four hexadecimal characters, separated by blanks
The length of the patch must be in the range of 1 to 256 bytes. The entire patch must be within the boundaries of the sector you specified. Note that the length of the patch does not have to equal the value you specified for nnn (the byte verification count).

If there are no errors, the patch is applied.
The utility responds with:

```
TF001I DISK PATCH COMPLETED
```

The utility issues the completion message which is followed by the prompt for the next patch. The utility continues in this mode until you terminate it by pressing the LOAD key.

THE OUTPUT YOU RECEIVE

The output from this utility are prompt messages from the utility and the data for the requested patch to diskette.

HOW TO HANDLE ERRORS

If a recoverable error occurs, the utility prints an appropriate error message and then reissues the prompt. Recoverable errors are:

- Syntax error in your response to a prompt
- Device at specified device address not a disk
- Sector address not a valid disk address
- Displacement not within the boundaries of the sector you specified
- Number of bytes to be displayed exceeds 256

If an unrecoverable disk I/O error occurs, the utility abnormally terminates. A terminal error occurs when an I/O error prevents the utility from printing a message at the operator station.

EXAMPLE

The following example shows what happens when you apply a patch to the disk.

Operator Station Printout	Explanation
IP100 EXEC=	The loader issues a request for the program that is to be executed.
TF	You enter the name of the Disk Patch utility.
TF000I DISK PATCH STARTED	The Disk Patch utility has started.
TF200A PATCH AREA=	The utility issues a request for the address of the location to be patched.
03,003003,24,08	You enter the device address, sector address, byte displacement, and the byte verification count.
TF003A INVALID DEVICE ADDRESS– 3 DIGITS REQUIRED	The device address is incorrect.
TF200A PATCH AREA=	The utility reissues the prompt for the address of the area to be patched.
003,003003,24,08	You enter the correct device address, sector address, byte displacement, and the byte verification count.
TF101A INVALID DISPLACEMENT-3 DIGITS REQUIRED	The byte displacement is incorrect.
TF200A PATCH AREA=	The utility reissues the prompt for the address of the area to be patched.
003,003003,024,08	You enter the device address, sector address, correct byte displacement, and the byte verification count.
TF105A INVALID BYTE VERIFICATION COUNT–3 DIGITS REQUIRED	The byte verification count is invalid.
TF200A PATCH AREA=	The utility reissues the prompt for the address of the area to be patched.
003,003003,024,008	You enter the device address, sector address, byte displacement, and the correct byte verification count.
000A 123B 0101 A00C	These are the 8 bytes requested for verification.
TF201A REPLACEMENT DATA=	The utility issues a request for you to enter a patch or cancel this particular patch operation.
NONE	No patch is applied.
TF001I DISK PATCH COMPLETED	The patch cycle was successfully completed.
TF200A PATCH AREA=	The utility prompts for the next patch cycle.

Storage To Diskette Dump (S1)

WHAT THIS UTILITY DOES

When you press the LOAD key on the console, the hardware loads this utility into main storage from a pre-built dedicated diskette. The utility then dumps the contents of storage to that same diskette.

HOW TO CREATE THE DISKETTE

You must create a special diskette for the storage to diskette dump.

Locate the ccchss of the program S1 on the system verification listing. Using the disk to diskette copy program, copy the program S1 to the dedicated diskette. You must start the copy 1 disk sector beyond the beginning of the program to remove the header record. S1 must be placed on the diskette at cylinder 0, head 0, sectors 1 and 2.

Next, copy the second phase of the program to the dedicated diskette. Locate the ccchss of the program S2 on the system verification listing. Using the disk to diskette copy program, copy the program S2 to cylinder 1, head 0, sectors 1 through 26 of the diskette. Once this is done, the diskette is ready for you to use.

HOW TO USE IT

Mount the special storage to diskette dump on the fixed address diskette device and set the switch to alternate. After you press the LOAD key, the dump starts at storage address 256 and continues until all storage has been dumped. The first 256 bytes are destroyed by the loading of the dump program. Also, on level 0, the IAR is altered by the dump.

THE OUTPUT YOU RECEIVE

The output from this utility is the storage dump onto the diskette. The HDR1 record looks like this:

bytes		
	00–03	HDR1
	05–21	data set identifier indicating that this is a dump data set
	22–26	the block length, which is 128
	28–32	the starting address of the dump, which is cylinder 2, head 0, sector 1
		This area appears in cchss format and contains 02001.
	33	the physical record length, which is 128
	34–38	the ending address of the dump, which the utility provides in ccchss format
	74–78	the end of data address, which is updated by the dump program

This is the format of the dump.

Beginning at cylinder 2, head 0, sector 1:

- IAR, general-purpose register, and LSR for each level
- The address in storage where the dump begins

Beginning at cylinder 3, head 0, sector 1 is the storage dump.

HOW TO HANDLE ERRORS

If the utility encounters any recoverable errors during the dump, the utility tries to recover. However, if the error is unrecoverable, the processor stops.

EXAMPLE

The following is an example of building a diskette for the Storage to Diskette Dump utility.

Operator Station Printout	Explanation
IP100A EXEC=	The loader issues a request for the program that is to be executed.
FR	You enter the name of the Disk to Diskette Copy utility.
FR001I DISK TO DISKETTE COPY STARTED	The Disk to Diskette Copy utility has started.
FR100A FROM DATA AREA=	The utility prompts for the source data file information.
003, 002143, 002143	You enter the device address and the starting sector address +1 of the program S1. This removes the header record from the diskette bootstrap. Only one disk sector is copied.
FR200A TO DATA AREA=	The utility issues this prompt for the destination data file information.
002, 000001, 000002	You enter the device address and the starting sector address where the bootstrap must reside on cylinder 0, head 0, sectors 1 and 2.
FR099I LAST SECTOR WRITTEN IS 000002	The utility prints the address of the last sector written on the diskette.
FR001I DISK TO DISKETTE COPY COMPLETED	The copy was successfully completed.
FR100A FROM DATA AREA=	The utility prompts for the source data file information.
003, 002144, 002152	You enter the device address and the starting sector address of the program S2. This copy must include the header and the program.
FR200A TO DATA AREA=	The utility issues this prompt for the destination data file information.
002, 001001, 001026	You enter the device address and the starting sector address where the Phase 2 of the program must reside on cylinder 1, head 0, sectors 1–26.
FR099I LAST SECTOR WRITTEN IS 001026	The utility prints the address of the last sector written on the diskette. It may be something less than sector 26.
FR001I DISK TO DISKETTE COPY COMPLETED	The copy was successfully completed.
FR100A FROM DATA AREA=	The utility prompts for a new source data file for the next copy operation.

Storage To Printer Dump (P1)

WHAT THIS UTILITY DOES

When you press the LOAD key on the console, the hardware loads this utility from a dedicated pre-built diskette. The utility then dumps the contents of storage on the printer.

HOW TO CREATE THE DISKETTE

You must create a special diskette for the storage to diskette dump.

Locate the ccchss of the program P1 on the system verification listing. Using the disk to diskette copy program, copy the program P1 to the dedicated diskette. You must start the copy 1 disk sector beyond the beginning of the program to remove the header record. P1 must be placed on the diskette at cylinder 0, head 0, sectors 1 and 2.

Next, copy the second phase of the program to the dedicated diskette. Locate the ccchss of the program P2 on the system verification listing. Using the disk to diskette copy program, copy the program P2 to cylinder 1, head 0, sectors 1 through 26 of the diskette. Once this is done, the diskette is ready for you to use.

HOW TO USE IT

Set the IPL switch to alternate (diskette) and mount the pre-built storage to printer dump on the fixed address diskette device. After you press the LOAD key, the level status blocks for all levels are printed. No messages are printed at the operator station.

Note. If the full function console is available and the system is in the diagnostic mode, the program stops and allows you to enter in R1 a hex starting address of X0100' or higher and to enter in R2 a hex ending address; otherwise, the dump starts at decimal location 256 and continues until the end of storage. On level 0, the IAR is altered by the dump.

When the system is in the diagnostic mode and a selected area has been printed, the program stops allowing a new entry to be made in R1 and R2. At any time an area is being printed, press the console INTERRUPT key to interrupt the program and select a new area to be dumped. The program will continue to wait for additional input until terminated by hitting the RESET button or IPL LOAD button.

THE OUTPUT YOU RECEIVE

The output from this utility is the storage dump on the printer. The data is dumped on the printer in the following format:

```
n  iiii  kkkk 1111  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx

   aaaa  hhhh  hhhh  <--------12 words--------->  hhhh  hhhh  eeee(24 char)eeee

   aaaa  hhhh  hhhh  <--------12 words--------->  hhhh  hhhh  eeee(24 char)eeee
```

where:

aaaa	=	the address of the leftmost byte of storage
eeee	=	the valid EBCDIC character or a period for an invalid character
hhhh	=	the contents of storage
iiii	=	the contents of the IAR
kkkk	=	the contents of the AKR
llll	=	the contents of the LSR
n	=	the interrupt level number
		The number n and the line to the right of the n are printed four times—once for each level
xxxx	=	the contents of the general-purpose rigisters

The storage dump will always start on a doubleword boundary.

Note. This program uses cylinder 3, head 0, sectors 1 thru 26 as a temporary work area on the IPLed diskette.

HOW TO HANDLE ERRORS

If it encounters any errors during the dump, the utility tries to recover. However, if the error is unrecoverable, the processor stops.

EXAMPLE

The following is an example of building a diskette for the Storage to Printer Dump utility.

Operator Station Printout	Explanation
IP100A EXEC=	The loader issues a request for the program that is to be executed.
FR	You enter the name of the Disk to Diskette Copy utility.
FR001I DISK TO DISKETTE COPY STARTED	The Disk to Diskette Copy utility has started.
FR100A FROM DATA AREA=	The utility prompts for the source data file information.
003, 002128, 002128	You enter the device address and the starting sector address +1 of the program P1. This removes the header record from the diskette bootstrap. Only one disk sector is copied.
FR200A TO DATA AREA=	The utility issues this prompt fro the destination data file information.
002, 000001, 000002	You enter the device address and the starting sector address where the bootstrap must reside on cylinder 0, head 0, sectors 1 and 2.
FR099I LAST SECTOR WRITTEN IS 000002	The utility prints the address of the last sector written on the diskette.
FR001I DISK TO DISKETTE COPY COMPLETED	The copy was successfully completed.
FR100A FROM DATA AREA=	The utility prompts for the source data file information.
003, 002129, 002141	You enter the device address and the starting sector address of the program P2. This copy must include the header and the program.
FR200A TO DATA AREA=	The utility issues this prompt for the destination data file information.
002, 001001, 001026	You enter the device address and the starting sector address where the Phase 2 of the program must reside on cylinder 1, head 0, sectors 1—26.
FR099I LAST SECTOR WRITTEN IS 001026	The utility prints the address of the last sector written in the diskette. It may be something less than sector 26.
FR001I DISK TO DISKETTE COPY COMPLETED	The copy was successfully completed.
FR100A FROM DATA AREA=	The utility prompts for a new source data file for the next copy operation.

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This appendix contains in numeric order within each component the following:

- Common messages relating to normal initiation/termination and messages caused by incorrect user responses to common prompts which require the following input:

    ddd,ccchss,ccchss

    where:

ddd	—	Device address
ccchss	—	Starting sector address
ccchss	—	Ending sector address

- Unrecoverable I/O and system messages
- Component prompt type messages and unique component messages
- Wait code messages for the following utilities:

    IP—BOOTSTRAP/LOADER DISK
    S1—STORAGE TO DISKETTE DUMP
    P1—STORAGE TO PRINTER DUMP

    Note. You must have a full function console to see the wait code messages. These wait code messages appear at the end of the messages for each of the above utilities.

All messages in this appendix are in the following format:

idnnnc		text
id	—	2-character ID of the component
nnn	—	3-digit decimal number identifying the message
c	—	message type:

        A — Action; operator response to printed message required

        W — Warning; minor error detected; successful operation possible

        I — Informational; comment printed; no error

        E — Error detected; current operation terminated but program continues

        S — Severe Error condition; execution of program impossible

        T — Terminal Error; program aborts

ID	Component
CH	Create Diskette HDR1
DH	Delete Diskette HDR1
FD	Disk to Printer Dump
FI	Disk Initialization
FR	Disk to Diskette Copy
IP	IPL Bootstrap/Loader Disk
P1	Storage to Printer Dump
RD	Diskette to Printer Dump
RF	Diskette to Disk Copy
RI	Diskette Initialization
SB	Automatic System Build
SF	System Verification
S1	Storage to Diskette Dump
TF	Disk Patch
TR	Diskette Patch

COMMON MESSAGES

	Message and Explanation	*System Action*	*Your Action*
id000I	program name STARTED This message is issued after the processing program has been loaded and processing is started.	None.	None.
id001I	program name COMPLETED This message is issued after the processing program has completed its processing.	Program terminates.	None.
id002E	INCORRECT NUMBER OF PARMS - 3 REQUIRED The device address, starting sector address, and ending sector address must be given.	Reprompts.	Reenter the response.
id003E	INVALID DEVICE ADDRESS - 3 DIGITS REQUIRED Device address must be 3 digits.	Reprompts.	Reenter the response.
id004E	INVALID DEVICE ADDRESS - NON-DECIMAL DIGIT Device address must be decimal digits.	Reprompts.	Reenter the response.
id005E	DEVICE ADDRESS OUT OF RANGE Device address must be within range of 0 to 255.	Reprompts.	Reenter the response.
id006E	INCORRECT DEVICE TYPE - MUST BE DISK - AT DEVICE ddd Device used must be disk.	Reprompts.	Reenter the response.
id007E	INCORRECT DEVICE TYPE - MUST BE DISKETTE - AT DEVICE ddd Device used must be diskette.	Reprompts.	Reenter the response.
id010E	INVALID STARTING SECTOR ADDRESS - 6 DIGITS REQUIRED Starting sector address must be 6 digits.	Reprompts.	Reenter the response.
id011E	INVALID STARTING SECTOR ADDRESS - NON-DECIMAL DIGIT Starting sector address must be decimal digits.	Reprompts.	Reenter the response.
id012E	STARTING SECTOR ADDRESS OUT OF RANGE FOR DEVICE ddd Starting sector address range is as follows:	Reprompts.	Reenter the response.

DEVICE	*CCC*	*H*	*SS*
DISKETTE	000-074	0-1	1-26
DISK	000-302	0-1	0-59

id013E	INVALID ENDING SECTOR ADDRESS - 6 DIGITS REQUIRED Ending sector address must be 6 digits.	Reprompts.	Reenter the response.
id014E	INVALID ENDING SECTOR ADDRESS - NON-DECIMAL DIGIT Ending sector address must be decimal digits.	Reprompts.	Reenter the response.

	Message and Explanation	*System Action*	*Your Action*
id015E	ENDING SECTOR ADDRESS OUT OF RANGE FOR DEVICE ddd		
	Ending sector address range is as follows:	Reprompts.	Reenter the response.

DEVICE	CCC	H	SS
DISKETTE	000-074	0-1	1-26
DISK	000-302	0-1	0-59

	Message and Explanation	*System Action*	*Your Action*
id016E	ENDING SECTOR OCCURS BEFORE STARTING SECTOR FOR DEVICE ddd		
	Ending sector address on disk or diskette occurs before starting sector address.	Reprompts.	Reenter the response.
id018A	DEFAULT WORKSPACES (ccchss,ccchss)		
	The text editor, assembler, and linkage editor require workspaces. The operator has the option of accepting the location and size of the default workspaces or specifying his own workspaces.	None.	Respond to this prompt with either YES or NO. YES designates that the default workspaces are to be used. NO designates that the operator will specify his own workspaces. If the response is NO, the processing program will prompt for required workspaces.
id019E	INVALID RESPONSE - MUST BE YES OR NO		
	The response to the prompt must be either YES or NO.	Reprompts.	Respond to the prompt with either YES or NO.
id020E	WORKSPACES1 AND 2 OVERLAP		
	WORKSPACES1 and 2 were allocated the same or a portion of the same workspaces.	Reprompts.	Allocate separate workspaces for WORKSPACES1 and 2 and reenter the response.
id021E	WORKSPACES1 AND 3 OVERLAP		
	WORKSPACES1 and 3 were allocated the same or a portion of the same workspaces.	Reprompts.	Allocate separate workspaces for WORKSPACES1 and 3 and reenter the response.
id022E	WORKSPACES2 AND 3 OVERLAP		
	WORKSPACES2 and 3 were allocated the same or a portion of the same workspaces.	Reprompts.	Allocate separate workspaces for WORKSPACES2 and 3 and reenter the response.
id030E	DEVICE NOT ATTACHED AT ADDRESS ddd		
	The device at the specified device address is not attached to the system. An error in the response is assumed.	Reprompts.	Reenter the response.
id031A	DEVICE NOT READY AT ADDRESS ddd		
	The device at the specified device address is not in the ready state.	Waits until the device has been readied.	Ready the appropriate device and generate an interrupt (hit any key) at the operator console.
id032A	END OF FORMS ON PRINTER		
	The printer is out of paper.	Waits until the printer has been adjusted.	Add paper to the printer and ready the device.

	Message and Explanation	*System Action*	*Your Action*
id033A	PRINTER IN WAIT STATE The printer has been put in the wait state (hardware switch).	Waits until the printer has been readied.	Ready the printer.
id034A	DISKETTE REMOVED PRIOR TO I/O COMPLETION AT ADDRESS ddd The diskette was removed while the processing program was addressing it.	Waits until the removed diskette is returned.	Return the diskette to the drive.
id035A	INVALID VOL1 DISKETTE LABEL ON DEVICE ddd The VOL1 label (sector 000007) is invalid.	Waits until the VOL1 has been corrected.	Initialize the diskette or correct the VOL1 according to the fields defined in The IBM Diskette for Standard Data Interchange, Order Number GA21-9182-0.
id036A	REPLY TO WHEN THE DEVICE IS READY This message is printed after the following action messages: • id031A • id032A • id033A • id034A • id035A and is reissued if GO is not entered properly.	Waits for operator reply.	Rebuild the system. If the problem still persists, submit a Authroized Program Analysis Report (APAR) as outlined in the Program Logic Manual.
id099I	LAST SECTOR WRITTEN = ccchss Each processing program that creates or moves data into a user data file identifies the sector address of the last sector written.	None.	None.

UNRECOVERABLE I/O AND SYSTEM MESSAGES

Message and Explanation	*System Action*	*Your Action*

id900T   UNRECOVERABLE I/O ERROR:

Your Action

Rebuild the system. If the problem
still persists, submit a Authorized
Program Analysis Report (APAR) as
outlined in the Program Logic Manual.

DEVICE = ddd
ERROR CODE = nnnn
IO CC = n INT CC = n
ISB = nnnn
DEVICE ID = nnnn

IDCB	=	nnnn nnnn
CSSW	=	nnnn nnnn nnnn nnnn nnnn nnnn nnnn nnnn
DCB1	=	nnnn nnnn nnnn nnnn nnnn nnnn nnnn nnnn
DCB2	=	nnnn nnnn nnnn nnnn nnnn nnnn nnnn nnnn

SECTOR = ccchss

An unrecoverable I/O error has
occurred on the specified device.
The error code describes the type
of error which occurred last in
the sequence of error recovery retries.

System Action

Program abnormally
terminates.

Values for the error code:

X'0412' - Device busy
X'0413' - Control address marker present
X'0414' - Parity error
X'0415' - Intervention required
X'0416' - Controller busy
X'0417' - Invalid interrupt
X'0418' - Printer error
X'0419' - Printer error
X'041B' - Track overflow
X'041C' - Invalid surface side specified
X'041E' - Command reject
X'041F' - Protect check
X'0420' - Address specification error, DCB specified error
X'0421' - Invalid storage address
X'0422' - Invalid IO command
X'040F' - Unrecoverable error; check IO CC, INT CC, ISB, and cSSW for error analysis

The IO CC is the IO machine
instruction code set by the
last executed IO instruction
to the device.

The IDCB field displays the
operand of that I/O instruction.
The INT CC is the condition code
presented by the last interrupt
from the device, and the ISB is the
interrupt status byte associated
with the interrupt. The DEVICE ID
field identifies the device and
must be considered when analyzing
the ISB and IDCB field as described
by the specified devices attachment
hardware description.
GA34-0023 IBM 4221 Diskette Unit
Description
GA34-0024 IBM 4211 Disk Storage
Unit Description
GA34-0025 IBM 0241 Printer
Description
GA34-0022 IBM 4011 Processor &
Processor Feature Description
GA34-0021 IBM 4021 Processor &
Processor Feature Description

The following is a brief procedure
for error analysis:

For cycle stealing devices,
interrogate the information in   the
following steps:

• Check for IO CC errors
• If IO CC indicates success then
check for INT CC errors
• If INT CC exception condition,
then check ISB for errors
• If cycle steal status is
available (as indicated by
the ISB), then error status
bits are set by the CSSW
(cycle steal status words).

Note. For non-cycle steal status
available errors, the IDCB points
to DCB1 which is the last DCB issued
to the device. The contents of DCB1
are related to the type of command
field and modifier in the IDCB. DCB2
contains the READ/WRITE DCB last issued
to the device. If the chain bit is on
in DCB1, then DCB2 is chained to DCB1.
For disk and diskette devices, SECTOR
specifies the ccchss of the last
sector attempted to be accessed if
DCB2 contains a READ/WRITE command
field.

id901T   IOCS CALLER ERROR
                ERROR CODE = nnnn
                IOCB ADDRESS = nnnn
                IOCB   =   nnnn nnnn nnnn nnnn nnnn nnnn nnnn nnnn
                               nnnn nnnn nnnn nnnn nnnn nnnn nnnn nnnn
                               nnnn nnnn nnnn nnnn nnnn nnnn nnnn nnnn
                               nnnn nnnn nnnn nnnn nnnn nnnn nnnn nnnn
                               nnnn nnnn nnnn nnnn nnnn nnnn nnnn nnnn

A system error has been detected.   Same as id900T.   If the device is a disk or diskette
                                                                    and the error is determined
                                                                    to be no record found, assign
Possible error codes: the area designated by SECTOR an
X'1001' - Invalid DDD pointer in IOCB   alternate location using the
X'1002' - Previously connected IOCB   Disk/Diskette Initialization utility.
X'1003' - Un-CONNECTed IOCB (DCONNECT)   If the error condition persists, the
X'2004' - CONNECT race detected   hardware device should be serviced.
X'2005' - Invalid IOCB-DDB physical record size
X'2008' - Invalid internal CONNECT parameter
X'2009' - Invalid DDB physical record size
X'100A' - Invalid IOCB-DDB device ID
X'1101' - Invalid buffer address
X'1102' - Un-CONNECTed IOCB (READ/WRITE)
X'1103' - Invalid IOCB on DDB-IOCB chain
X'1104' - Invalid IOCB self-pointer
X'1105' - Invalid IOCB-DDB pointer on DDB-IOCB chain
X'1106' - Invalid IOCB-DDB CONNECT status

id902T   IOCB INVALID
ERROR CODE = nnnn
IOCB ADDRESS = nnnn

IOCB	=	nnnn nnnn nnnn nnnn nnnn nnnn nnnn nnnn
		nnnn nnnn nnnn nnnn nnnn nnnn nnnn nnnn
		nnnn nnnn nnnn nnnn nnnn nnnn nnnn nnnn
		nnnn nnnn nnnn nnnn nnnn nnnn nnnn nnnn
		nnnn nnnn nnnn nnnn nnnn nnnn nnnn nnnn

An error code other than those   Same as id900T.   Same as id900T.
listed in id900T and id901T is
present.

---

id950I   UNDETERMINABLE CHECK

PSW	SAR	IAR	LSR
xxxx	xxxx	xxxx	xxxx

REG0	REG1	REG2	REG3	REG4	REG5	REG6	REG7
xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx

An exception has occurred but the   Continues processing.   Same as id901T.
cause cannot be determined.

---

id951T   PROGRAM CHECK

PSW	SAR	IAR	LSR
xxxx	xxxx	xxxx	xxxx

REG0	REG1	REG2	REG3	REG4	REG5	REG6	REG7
xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx

A program check has occurred at   Same as id900T.   Same as id900T.
location of IAR.

---

id952I   MACHINE CHECK

PSW	SAR	IAR	LSR
xxxx	xxxx	xxxx	xxxx

REG0	REG1	REG2	REG3	REG4	REG5	REG6	REG7
xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx

A machine check has occurred.   Same as id900T.   Same as id900T.

---

id953T   INVALID SVC

PSW	SAR	IAR	LSR
xxxx	xxxx	xxxx	xxxx

REG0	REG1	REG2	REG3	REG4	REG5	REG6	REG7
xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx

A supervisor call has been made.   Same as id900T.   Same as id900T.
No SVCs are supported.

---

id954I   POWER THERMAL WARNING

PSW	SAR	IAR	LSR
xxxx	xxxx	xxxx	xxxx

REG0	REG1	REG2	REG3	REG4	REG5	REG6	REG7
xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx

Power and/or thermal warning   Same as id950I.   Same as id900T.
has occurred.

---

id955I   INVALID TRACT REQ

PSW	SAR	IAR	LSR
xxxx	xxxx	xxxx	xxxx

REG0	REG1	Reg2	REG3	REG4	REG5	REG6	REG7
xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx

A trace request has been made.   Same as id950I.   Same as id901T.
No trace requests are supported.

	Message and Explanation	System Action	Your Action

id956I **INVALID CONSOLE INTR**

PSW	SAR	IAR	LSR				
xxxx	xxxx'	xxxx	xxxx				
REG0	REG1	REG2	REG3	REG4	REG5	REG6	REG7
xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx

A console interrupt has been made. The console interrupt function is not supported.

Same as id950I.

Same as id901T.

---

id990T **EXECUTION HALTED**

This message is printed after the following messages:

- id951T
- id952T
- id953T

Same as id900T.

Enter GO (CR) when the requested action from the previous action message has been taken.

---

id999I **FUNCTION TERMINATED**
REGS xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx

This message is printed by the processing program upon detection of a terminal error and indicates abnormal termination. REGS displays the register contents at termination time.

Same as id900T.

If a full function console is present, do not depress CONSOLE INTERRUPT during processing. If a full function console is not present, same as id901T.

CH—CREATE DISKETTE HDR1 MESSAGES

	Message and Explanation	*System Action*	*Your Action*
CH110A	DEVICE ADDRESS= A prompt requesting the diskette device address.	Waits for input.	Enter a 3-character device address in ddd format.
CH120A	HEADER NAME= A prompt requesting the name of the data file described by the HDR1 record.	Waits for input.	Enter a 1- to 8-character alphameric name in cccccccc format.
CH130A	EXTENTS= A prompt requesting the starting and the ending sector addresses of the data file to be defined by this HDR1 record.	Waits for input.	Enter the starting and ending sector addresses in ccchss,ccchss format.
CH140A	END OF DATA= A prompt requesting the address, within the data file, that contains the last data item.	Waits for input.	Enter the address in ccchss format.
CH146E	EXCHANGE DATA AREAS MUST LIE ON CYLINDERS 1 THRU 73 Cylinders 0 and 74 are reserved on basic exchange diskettes.	Reprompts.	Reenter the exchange data areas on cylinders 1 thru 73.
CH200E	END OF DATA NOT WITHIN EXTENTS The ccchss given for the end of file is greater than the end of extent ccchss or less than the beginning of extent ccchss.	Reissues prompt for the end of file ccchss.	Reenter the valid end of file.
CH215E	EXTENTS NOT COMPARIBLE WITH EXISTING HDR1 The proposed data set overlaps an existing data set and can not be built.	Reprompts.	Look at HDR1's on the diskette and pick the beginning and ending extents to avoid conflict.
CH230E	ALL HDR1's IN USE - UNABLE TO CREATE All 19 HDR1's on this diskette are in use.	Reprompts.	Delete a data set to recover a HDR1 or get a diskette with free HDR1's.
CH240E	EXTENT ARRANGEMENT INDICATOR NOT COMPATIBLE The extent arrangement indicator in the VOLID was P a flag indicating that the extents must be adjacent and that all unallocated space must follow the last data set extent on the volume, and creation of this data set would cause either the data sets to not be in ccchss order or not all of the free space to be at the end.	Reprompts.	Set up the beginning ccchss to follow directly after the last contiguous data set on the volume.
CH250E	DUPLICATE NAME ON VOLUME Header name given matches the HDR1 name already on the diskette.	Reprompts.	Pick a new data set name and restart the program.
CH260E	UNABLE TO READ HDR1 Invalid extents (BOE or EOE) on the HDR1 were read from the diskette or an unrecoverable I/O error on the HDR1 was read.	Reprompts.	Check the HDR1's. If they are all valid, retry. If the message persists, copy to a new diskette and retry.

	Message and Explanation	System Action	Your Action
CH401E	INPUT MESSAGE TOO LONG All expected fields were found before the end of the input message.	Reprompts.	Check for an extra field, wrong input type, misplaced comma or too many characters in the last field. Reenter the corrected data.
CH402E	FIELD TOO LONG OR DELIMITER ERROR Too many characters were detected prior to a comma or blank field delimiter.	Reprompts.	Correct and reenter the input.
CH405E	INPUT NAME IS INVALID An illegal character or a null name was entered in the name field.	Reprompts.	Correct and reenter the input.
CH406E	INVALID CHARACTER IN INPUT FIELD Conversion returned the invalid character code. A non-decimal digit was entered in the converted field.	Reprompts.	Correct and reenter the input.

DH—DELETE DISKETTE HDR1 MESSAGES

	Message and Explanation	System Action	Your Action
DH110A	DEVICE ADDRESS= A prompt requesting the diskette device address.	Waits for input.	Enter a 3-character device address in ddd format.
DH120A	HEADER NAME= A prompt requesting the name of the HDR1 record to be deleted.	Waits for input.	Enter a 1- to 8-character alphameric name in cccccccc format.
DH240E	EXTENT ARRANGEMENT INDICATOR NOT COMPATIBLE Extent arrangement indicator (EAI) is P a flag indicating that the extents must be adjacent and that all unallocated space must follow the last data set extent on the volume, and the data set to be deleted is not the last physical HDR1 on the diskette. Only the last may be deleted.	Reprompts.	Delete all following HDR1's first.
DH250E	HDR1 NAME NOT FOUND Data file name supplied is not on the diskette.	Reprompts.	Get the correct data file name and restart the program.
DH260E	UNABLE TO READ HDR1 Invalid extents (BOE or EOE) on the HDR1 were read from the diskette or an unrecoverable I/O error on the HDR1 was read.	Reprompts.	Check the HDR1's. If they are all valid, retry. If the message persists, copy to a new diskette and retry.
DH401E	INPUT MESSAGE TOO LONG All expected fields were found before the end of the input message.	Reprompts.	Check for an extra field, wrong input type, misplaced comma or too many characters in the last field. Reenter the corrected data.
DH402E	FIELD TOO LONG OR DELIMITER ERROR Too many characters were detected prior to a comma or blank field delimiter.	Reprompts.	Correct and reenter the input.
DH405E	INPUT NAME IS INVALID An illegal character or a null name was entered in the name field.	Reprompts.	Correct and reenter the input.
DH406E	INVALID CHARACTER IN INPUT FIELD Conversion returned the invalid character code. A non-decimal digit was entered in the converted field.	Reprompts.	Correct and reenter the input.

FD—DISK TO PRINTER DUMP MESSAGES

	Message and Explanation	*System Action*	*Your Action*
FD100A	DISK AREA= A prompt requesting the location of the data file to be dumped.	None.	Enter the location of the data file in ddd,ccchss,ccchss format.
FD202I	DISK TO PRINTER DUMP CYCLE ABNORMALLY TERMINATED The dump cycle has been terminated.	Reprompts.	Reenter the response.

FI—DISK INITIALIZATION MESSAGES

		Message and Explanation	*System Action*	*Your Action*
FI003I		PRIMARY INITIALIZATION MODE This mode was chosen and the given disk is to be reinitialized.	None.	None.
FI004I		ALTERNATE SECTOR MODE This mode was chosen and an alternate is to be assigned to the specified sector.	None.	None.
FI110A		DEVICE ADDRESS= A prompt requesting the disk device address.	Waits for the input.	Enter a 3-character device address in ddd format.
FI120A		TYPE= A prompt requesting the type of initialization to be performed.	Waits for the input.	Enter either PI for primary initialization or AS for alternate sector assignment.
FI121E		INVALID TYPE - MUST BE PI OR AS An incorrect initialization type has been entered in the response to TYPE= prompt.	Reprompts for initialization type via the TYPE= prompt.	Respond to the prompt with PI for primary initialization or AS to assign an alternate sector.
FI130A		SECTOR ADDRESS= A prompt requesting the sector address of the defective sector for alternate assignment.	Waits for input.	Enter the sector address of the defective sector in ccchss format.
FI141T		ALTERNATE SECTOR ALREADY ASSIGNED An alternate sector has already been assigned.	Program terminates.	Program error. Retry with a rebuilt system. If error persists, then perform software maintenance.
FI142W		UNABLE TO MARK DEFECTIVE ALTERNATE FOR CCCHSS ccchss Alternate sector assignment is unable to mark the alternate for ccchss as defective, but a new alternate has been assigned.	None.	Avoid use of the sector ccchss becuase data loss may occur.
FI143W		DATA RECOVERY FAILED Data from the bad sector has not been recovered.	None.	Data from the sector reassigned is lost.
FI150A		ARE DEFECTIVE SECTOR FLAGS INVALID A prompt requesting whether the defective flags are invalid.	Waits for input.	Enter either YES or NO. YES allows a disk with invalid sector flags to be processed. Note. Reply YES only if the disk cannot be initialized; otherwise, enter NO unless the defective sector flags have been destroyed.
FI151A		REPLY TO DEFECTIVE FLAG PROMPT MUST BE YES OR NO Reply to the defective flag prompt must be YES or No. Any other response is invalid.	Reprompts.	Reenter the response to the invalid sector flag prompt as either YES or NO.

Message and Explanation	*System Action*	*Your Action*
FI200T ALTERNATE SECTORS NOT ASSIGNED FOR CYLINDER 1		
An attempt was made to assign an alternate to a sector on cylinder 1. Cylinder 1 is reserved to contain only alternate sectors.	Program terminates.	If the intent is to assign an alternate to a bad alternate sector, the ccchss of the original bad sector should be used in requesting the alternate sector assignment. Any unassigned bad sector on cylinder 1 should be marked as defective and ignored.
FI210W SECTOR ccchss ON CYLINDER 1 HAS BEEN MARKED DEFECTIVE		
The noted sector on the alternate cylinder has been marked as defective and cannot be used in alternate sector assignment.	None.	The number of such messages during an initialization should be logged. This number added to the number of alternates assigned tells the number of sectors used on Cyl 1. This keeps track of the available alternates.
FI220W UNABLE TO MARK SECTOR AT ccchss AS DEFECTIVE		
Disk Initialization has determined that ccchss is defective, but it has been unable to mark it as such. An alternate has been assigned. If the error on sector ccchss is intermittent, this could cause the original damaged sector to be referenced in subsequent I/O operations. ccchss is the cylinder, head, sector address of the sector referenced.	None.	None.
FI230T UNABLE TO ASSIGN ALTERNATE SECTOR - ALTERNATE CYLINDER FULL		
Alternate sector assignment has been requested, but an alternate can not be assigned, because there are no free alternates to use.	Program terminates.	Since an alternate can not be assigned on the alternate cylinder, the user must either avoid the bad sector or program an error recovery for this case. The condition should be reported, because the normal error recovery route is now blocked and the disk can probably not be initialized. In which case the entire disk should be considered defective.
FI240T UNABLE TO INITIALIZE - TOO MANY BAD SECTORS		
Primary initialization has been attempted and more than 120 bad sectors have been found.	Program terminates.	The disk file is unusable.
FI401E INPUT MESSAGE TOO LONG		
All expected fields were found before the end of the input message.	Reprompts.	Check for an extra field, wrong input type, misplaced comma or too many characters in the last field. Reenter the corrected data.

Message and Explanation		System Action	Your Action
FI402E	FIELD TOO LONG OR DELIMITER ERROR Too many characters were detected prior to a comma or blank field delimiter.	Reprompts.	Correct and reenter the input.
FI405E	INPUT NAME IS INVALID An illegal character or null name was entered in the name field.	Reprompts.	Correct and reenter the input.
FI406E	INVALID CHARACTER IN INPUT FIELD Conversion returned the invalid character code. A non-decimal digit was entered in the converted field.	Reprompts.	Correct and reenter the input.

FR—DISK TO DISKETTE COPY MESSAGES

		Message and Explanation	*System Action*	*Your Action*
FR100A		FROM DATA AREA= A prompt requesting the source data file information.	None.	Enter the source data file information in ddd,ccchss,ccchss format.
FR102E		DISK TO DISKETTE COPY CYCLE ABNORMALLY TERMINATED The copy cycle has been terminated without completion.	Reprompts.	Reenter the response.
FR200A		TO DATA AREA= A prompt requesting the destination data file information.	None.	Enter the destination data file information in ddd,ccchss,ccchss format.
FR420E		INVALID DESTINATION DATA FILE - INSUFFICIENT SIZE The destination data file is too small to hold the copy of the source data file.	Reprompts.	Reenter the response.

IP—BOOTSTRAP/LOADER DISK MESSAGES

	Message and Explanation	*System Action*	*Your Action*
IP100A	EXEC= The loader prompts for the name or the starting sector address of the program to be executed.	Waits for the input from the operator station.	Enter a 2-character IBM supplied ID or the ccchss of the program.
IP200E	PROGRAM TOO LARGE FOR STORAGE $IPTLODR determined that the requested program to be loaded will not fit in the available storage.	Reprompts for the next request.	Request another program to be loaded.
IP210E	INVALID PROGRAM HEADER The header at the location that the operator requested was invalid.	Issues another prompt to the operator.	Determine if the location on the disk for the program is correct and reenter.
IP220E	PROGRAM NOT FOUND The requested program to be loaded was not on the disk.	Reprompts for the next request.	Request another program to be loaded.
IP230E	STARTING SECTOR ADDRESS INVALID The ccchss value is either out of range for the device or a non- numeric value is used.	Reprompts.	Determine the correct value and reenter.

IP—BOOTSTRAP/LOADER DISK WAIT CODES

	Wait Code and Explanation	*System Action*	*Your Action*
X'610E'	Machine check.	Program terminates.	None.
X'610F'	Program check.	Program terminates.	None.
X'61CC'	I/O error preparing printer.	Program terminates.	None.
X'61DD'	I/O error preparing operator station.	Program terminates.	None.
X'61BB'	I/O error printer.	Program terminates.	None.
X'61BC'	I/O error operator station (write).	Program terminates.	None.
X'61AA'	I/O error operator station (read).	Program terminates.	None.
X'61AB'	I/O error disk, start.	Program terminates.	None.
X'61CD'	I/O error disk, end of track.	Program terminates.	None.
X'6188'	No ISB (instruction status block) stored.	Program terminates.	None.
X'6120'	No record found.	Program terminates.	None.
X'61FF'	Loader error.	Program terminates.	None.
X'6199'	Unrecoverable I/O error.	Program terminates.	None.

P1—STORAGE TO PRINTER DUMP WAIT CODES

	Wait Code and Explanation	System Action	Your Action
X'61EE'	Too many alternate cylinders.	Program terminates.	None.
X'610F'	Program check.	Program terminates.	None.
X'610E'	Machine check.	Program terminates.	None.
X'6106'	End of diskette.	Program terminates.	None.
X'61AB'	I/O error disk, start.	Program terminates.	None.
X'6120'	No record found.	Program terminates.	None.
X'6199'	Unrecoverable I/O error.	Program terminates.	None.
X'6188'	No ISB (instruction status block) stored.	Program terminates.	None.

RD—DISKETTE TO PRINTER DUMP MESSAGES

	Message and Explanation	*System Action*	*Your Action*
RD100A	DISK AREA= A prompt requesting the location of the data file to be dumped.	None.	Enter the location of the data file in ddd,ccchss,ccchss format.
RD202I	DISKETTE TO PRINTER DUMP CYCLE ABNORMALLY TERMINATED The dump cycle has been terminated.	Reprompts.	Reenter the response.

RF—DISKETTE TO DISK COPY MESSAGES

	Message and Explanation	*System Action*	*Your Action*
RF100A	FROM DATA AREA= A prompt requesting the source data file information.	None.	Enter the source data file information in ddd,ccchss,ccchss format.
RF102E	DISKETTE TO DISK COPY CYCLE ABNORMALLY TERMINATED The copy cycle has been terminated without completion.	Reprompts.	Reenter the response.
RF200A	TO DATA AREA= A prompt requesting the destination data file information.	None.	Enter the destination data file information in ddd,ccchss,ccchss format.
RF420E	INVALID DESTINATION DATA FILE - INSUFFICIENT SIZE The destination data file is too small to hold the copy of the source data file.	Reprompts.	Reenter the response.

RI—DISKETTE INITIALIZATION MESSAGES

	Message and Explanation	*System Action*	*Your Action*
RI110A	DEVICE ADDRESS= A prompt requesting the device address of the diskette to be initialized.	None.	Enter a 3-character device address in ddd format.
RI120A	NEW VOLID= A prompt requesting the VOLID to be written to the diskette.	None.	Enter a 1- to 6-character alphameric name in cccccc format.
RI125I	CURRENT VOLID = cccccc An informational message which supplies the CURRENT VOLID.	None.	None.
RI127A	DO YOU WANT TO INITIALIZE THIS DISKETTE? RESPOND YES OR NO. A prompt which is issued when the supplied NEW VOLID is different from the existing CURRENT VOLID on the diskette.	None	Enter YES or NO.
RI129A	INVALID RESPONSE - MUST BE YES OR NO An invalid response has been entered for the prompt from message RI127A.	Reprompts.	Enter YES or NO.
RI133I	INVALID VOL1 LABEL The diskette has a VOL1 label which is either not standard or destroyed.	None.	None.
RI135I	VOLID IS BLANK The VOLID of the VOL1 label is blank.	None.	None.
RI140I	DEFECTIVE CYLINDER cch An informational message which is issued for each defective cylinder. cc is the decimal number of the defective cylinder and h is the decimal number of the head.	None.	None.
RI200T	UNABLE TO INITIALIZE - TOO MANY DEFECTIVE CYLINDERS Two cylinders on a diskette may be formatted as bad. If more exist, the diskette is considered defective.	Program terminates.	Get a new diskette. Old one is defective.
RI202T	UANBLE TO INITIALIZE - DEFECTIVE DISKETTE Either cylinder 0 is bad or the utility is unable to format a cylinder as defective because the entire cylinder is bad.	Program terminates.	Get a new diskette. Old one is defective.
RI205I	DISKETTE INITIALIZATION ABNORMALLY TERMINATED This message is issued when a reply of NO is entered for the message RI127A.	Reprompts.	Change the diskette or terminate the program.

	Message and Explanation	*System Action*	*Your Action*
RI401E	INPUT MESSAGE TOO LONG All expected fields were found before the end of the input message.	Reprompts.	Check for an extra field, wrong input type or too many characters in the field. Reenter the corrected data.
RI402E	FIELD TOO LONG OR DELIMITER ERROR Too many characters were detected prior to a comma or blank field delimiter.	Reprompts.	Correct and reenter the input.
RI405E	INPUT NAME IS INVALID An illegal character or null name is entered in the name field.	Reprompts.	Correct and reenter the input.
RI406E	INVALID CHARACTER IN INPUT FIELD Conversion returned the invalid character code. A non-decimal digit is entered in the converted field.	Reprompts.	Correct and reenter the input.

SB—AUTOMATIC SYSTEM BUILD

	Message and Explanation	*System Action*	*Your Action*
SB200E	HDR1 NOT FOUND The HDR1 supplied is not on the diskette.	Program terminates.	Check diskette HDR1's and make sure that the required files have HDR1's. Correct HDR1's and reload the diskette.
SB210T	INVALID PROG HEADER There is an invalid header at the location read by the loader.	Program terminates.	Check the PID diskettes HDR1s and ensure that the required files have valid headers.
SB220E	PROG NOT FOUND The Automatic System Build program is not found.	Program terminates.	Check the Automatic System Build program (ID=SB) which resides at diskette address ccchss=002001. Correct the program and rerun.
SB240T	PROG TOO LARGE FOR STORAGE $SBLOADR determined that the Automatic System Build program will not fit in storage.	Program terminates.	Check the size field in the HDR1 for ID=SB and ensure that it has not been modified. Correct the program and rerun.
SB300E	UNABLE TO READ VOL1 AND/OR HDR1 The Automatic System Build program is unable to read the VOL1 and/or the HDR1.	Program terminates.	The diskette is not properly formatted. Correct the format and reload the diskette.
SB400E	DISKETTE VOLID = nnnnnn NOT COPIED The diskette VOLID is not copied.	Program terminates.	An unrecoverable I/O error has occurred. The I/O should output the cause of the error. Correct the program and rerun.

SF—SYSTEM VERIFICATION MESSAGES

	Message and Explanation	System Action	Your Action
SF400E	INVALID HEADER ON DISK The header was encountered with an invalid header ID.	Program terminates.	Check the header ID for the header record.
SF500E	module name NOT ON DISK The module whose name appears in the message text was not found on the disk system.	Program terminates.	Determine why the module was not located on the disk.
SF600E	module name NOT IN SYSTEM TABLE The module whose name appears in the message text was not found in the system table.	None.	Check the program name for the header record.
SF700E	INVALID HEADER CHAIN The header for the end of the PP modules was encountered before the header for the SCP modules on the disk.	Program terminates.	Check the location of the headers for the end of the SCP modules and the end of the PP modules.

S1—STORAGE TO DISKETTE DUMP WAIT CODES

		Wait Code and Explanation	System Action	Your Action
	X'61EE'	To many alternate cylinders.	Program terminates.	None.
	X'610F'	Program check.	Program terminates.	None.
	X'610E'	Machine check.	Program terminates.	None.
	X'6106'	End of diskette.	Program terminates.	None.
	X'61AB'	I/O error disk, start.	Program terminates.	None.
	X'6120'	No record found.	Program terminates.	None.
	X'6199'	Unrecoverable I/O error.	Program terminates.	None.
	X'6188'	No ISB (instruction status block) stored.	Program terminates.	None.

TF—DISK PATCH MESSAGES

	Message and Explanation	*System Action*	*Your Action*
TF100E	INVALID DISPLACEMENT - NON-DECIMAL DIGIT The byte displacement into the sector is not a decimal digit. The byte displacement is the 3rd parm used to describe the patch location in response to PATCH AREA=ddd,ccchss,bbb,nnn. The byte displacement (bbb) must be 3 decimal digits.	Reprompts.	Reenter the patch data with the correct byte displacement.
TF101E	INVALID DISPLACEMENT - 3 DIGITS REQUIRED The byte displacement into the sector is not 3 decimal digits. The byte displacement is the 3rd parm used to describe the patch location in response to PATCH AREA=ddd,ccchss,bbb,nnn. The byte displacement (bbb) must be 3 decimal digits.	Reprompts.	Reenter the patch data with the correct byte displacement.
TF102E	INCORRECT NUMBER OF PARAMETERS - 4 REQUIRED The expected number of parameters was not received. The response to the prompt message PATCH AREA= must be of the form ddd,ccchss,bbb,nnn.	Reprompts.	Reenter the patch data with the correct number of parameters.
TF104E	INVALID BYTE COUNT - NON-DECIMAL DIGIT The number of bytes to display for verification is not a decimal digit. The byte verification count (nnn) must be 3 decimal digits.	Reprompts.	Reenter the patch data with the byte verification count in decimal.
TF105E	INVALID BYTE COUNT - 3 DIGITS REQUIRED The number of bytes to display for verification is not 3 decimal digits. The byte verification count (nnn) must be 3 decimal digits greater than 0 but less than 257.	Reprompts.	Reenter the patch data with 3 decimal digits.
TF106E	PATCH EXCEEDS SECTOR BOUNDARY When either the number of bytes to display for verification or the actual patch data is added to the byte displacement, the result is greater than 256. The data would be beyond the extent in bytes of the sector within which the patch should be applied.	Reprompts.	Reenter the patch data with the corrections.

	Message and Explanation	*System Action*	*Your Action*
TF107E	INVALID HEX DATA The replacement data for the patch was not entered in the form hhhh hhhh . . .', where hhhh is a 2-byte hexadecimal group of data.	Reprompts.	Reenter the patch data from the beginning of the patch session.
TF200A	PATCH AREA= A prompt requesting the location on the disk to be patched.	None.	Enter the requested information in ddd,ccchss,bbb,nnn format.
TF201A	REPLACEMENT DATA= A prompt requesting the replacement data to be patched.	None.	Enter either groups of four hexadecimal characters, separated by blanks in hhhh hhhh . . . format, or if no patch is to be applied, enter NONE.
TF202I	DISK PATCH CYCLE ABNORMALLY TERMINATED Error cycle end message appearing after verify or replacement functions are abnormally terminated.	Recycles and reprompts.	Reenter the corrected response to the prompt.

TR—DISKETTE PATCH MESSAGES

	Message and Explanation	*System Action*	*Your Action*
TR100E	**INVALID—NON-DECIMAL DIGIT** The byte displacement into the sector is not a decimal digit. The byte displacement is the 3rd parm used to describe the patch location in response to PATCH AREA=ddd,ccchss,bbb,nnn. The byte displacement (bbb) must be 3 decimal digits.	Reprompts.	Reenter the patch data with the correct byte displacement.
TR101E	**INVALID DISPLACEMENT - 3 DIGITS REQUIRED** The byte displacement into the sector is not 3 decimal digits. The byte displacement is the 3rd parm used to describe the patch location in response to PATCH AREA=ddd,ccchss,bbb,nnn. The byte displacement (bbb) must be 3 decimal digits.	Reprompts.	Issue error message. Start the patch processing loop again with the prompt message PATCH AREA=. Reenter the patch data with the correct byte displacement.
TR102E	**INCORRECT NUMBER OF PARAMETERS - 4 REQUIRED** The expected number of parameters was not received. The response to the prompt message PATCH AREA= must be of the form ddd,ccchss,bbb,nnn.	Reprompts.	Issue error message. Start the patch processing loop again with the prompt message PATCH AREA=. Reenter the patch data with the correct number of parameters.
TR104E	**INVALID BYTE COUNT - NON DECIMAL DIGIT** The number of bytes to display for verification is not a decimal digit. The byte verification count (nnn) must be 3 decimal digits.	Reprompts.	Reenter the patch data with the byte verification count in decimal.
TR105E	**INVALID BYTE COUNT - 3 DIGITS REQUIRED** The number of bytes to display for verification is not 3 decimal digits. The byte verification count (nnn) must be 3 decimal digits greater than 0 but less than 129.	Reprompts.	Reenter the patch data with 3 decimal digits.
TR106E	**PATCH EXCEEDS SECTOR BOUNDARY** When either the number of bytes to display for verification or the actual patch data is added to the byte displacement, the result is greater than 128. The data would be beyond the extent in bytes of the sector within which the patch should be applied.	Reprompts.	Reenter the patch data with the corrections.
TR107E	**INVALID HEX DATA** The replacement data for the patch was not input in the form hhhh hhhh. . . , where hhhh is a 2-byte hexadecimal group of data.	Reprompts.	Reenter the patch data.
TR200A	**PATCH AREA=** A prompt requesting the location on the diskette to be patched.	None.	Enter the requested information in ddd,ccchss,bbb,nnn format.

	Message and Explanation	*System Action*	*Your Action*
TR201A	REPLACEMENT DATA= A prompt requesting the replacement data to be patched.	None.	Enter either groups of four hexadecimal characters, separated by blanks in hhhh hhhh... format, or if no patch is to be applied, enter NONE.
TR202I	DISKETTE PATCH CYCLE ABNORMALLY TERMINATED Error cycle end message appearing after verify or replacement functions are abnormally terminated.	Recycles and reprompts.	Reenter the corrected response to the prompt.

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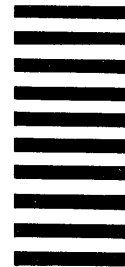
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