

5280



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File No. S5280-01

IBM 5280 Distributed Data System

Machine Verification Manual



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In addition to the FCC statement above, the user should be aware of the information in the IBM 5280 Planning and Site Preparation Guide, GA21-9351, and the IBM 5280 User's Setup Procedures, GA21-9365.

Fourth Edition (April 1983)

This major revision obsoletes GA21-9357-2. Changes or additions to the text and illustrations are indicated by a vertical line to the left of the change.

This edition applies to release 7, modification 0 of the IBM 5280 Distributed Data System and to all subsequent releases and modifications until otherwise indicated in new editions or Technical Newsletters.

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PREFACE

This manual is intended for operators, supervisors, and programmers using the IBM 5280 Distributed Data System.

This manual is used with the machine verification diskette which is kept in one of the IBM binders. Use this manual and the verification diskette to:

- Start the system and load the verification programs.
- Test each device attached to the system.
- Determine if the system has minor problems that can be corrected and take the necessary corrective action.
- Determine if a service call should be placed to the service representative.
- Dump the error log information.
- Dump main storage.
- Recover data from a defective diskette or disk.

RELATED PUBLICATIONS

The following manuals are used in conjunction with this IBM 5280 Machine Verification Manual:

- IBM 5280 Message Manual, GA21-9354
- IBM 5280 Operator's Guide, GA21-9364
- IBM 5280 SCP Reference Manual, GC21-7824
- IBM 5280 User's Setup Procedures, GA21-9365
- IBM 5280 Functions Reference Manual, GA21-9353
- IBM 5280 Data Areas and Diagnostic Aids Handbook, SY31-0595.

HOW TO USE THIS MANUAL

The chapter for each verification procedure begins with the word **START** to show you where to begin reading the procedure. Follow each procedure down the page. When you encounter an error (for example, if the expected display does not appear), the procedure refers you to a branch and tells you on which page the branch is located. The information in the branch directs you through further checks to help you isolate the problem or determine that you need to call your service representative.

If, after taking a branch, you decide to return to the original procedure, go back to the original branch point and continue to follow the original procedure.

This manual is divided into ten chapters.

Chapter 1 contains general information about the programs on the verification diskette, including their purpose and use. It also describes how to choose which verification tests you need to run and how to run only those tests.

Chapter 2 explains how to run the controller internal verification procedure. If you use this procedure, your system is dedicated to running verification programs while you run the procedures in Chapter 2.

The following chapters contain the instructions for running the other tests as follows:

- Chapter 3** Keyboard tests
- Chapter 4** Diskette drive tests
- Chapter 5** Disk drive tests
- Chapter 6** Printer tests
- Chapter 7** Communications tests
- Chapter 8** Second application program microprocessor tests.

Chapter 9 contains the procedures for obtaining the error log and main storage dump information. It also includes the instructions for creating an absolute dump diskette, used to take an absolute dump. IBM recommends that you create an absolute dump diskette at the earliest possible convenience so that it is available before it is needed.

Chapter 10 contains the procedure to recover data from a defective diskette or disk.

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CHAPTER 1. INTRODUCTION

There are three types of procedures described in this manual, verification, data recovery, and dumping procedures. These procedures require that you make selections from prompts, load programs, and insert diskettes. If you do not know how to operate the system to perform these actions, refer to the IBM 5280 Operator's Guide for instructions.

Note: IBM recommends that the programs described in this manual be loaded and run from the verification diskette. These programs should not be copied to and run from a disk.

VERIFICATION PROCEDURES

The verification procedures, explained in chapters 2 through 8 of this manual, allow you to check out the functions on the IBM 5280 System. The verification diskette, used in these procedures, contains a number of programs used for testing internal parts of the following:

- Controller
- Keyboard
- Display
- Magnetic stripe reader
- Disk drives
- Diskette drives
- Printers
- Communications.

The following list identifies the programs on the verification diskette used to verify that the devices attached to the system are operational. These programs are loaded either by an initial program load (IPL) operation or by entering the program name in response to a prompt. The programs are:

- Verification IPL Program
- Partition Load Program
- Keyboard Verification (TKBD)
- Diskette Verification (TDSK)
- Disk Verification (THDSK)
- Printer Verification (TPRNT)
- Communications Verification (TCOM)
- Second Application Program Microprocessor Verification (TPROC).

Verification IPL Program: This program checks the control area, the storage allocation, and the internal code necessary to load other programs. The IBM 5280 System is dedicated only to verification testing when this IPL program is loaded (that is, the system can do no other processing at that time).

Partition Load Program: After the verification IPL program has completed its internal checks, the partition load program is automatically loaded into all foreground partitions. This program completes the verification IPL and provides the prompt for the program name.

Keyboard Verification: This program allows you to enter data characters from the keyboard and to visually verify that the characters you entered are correctly displayed. This program also reads and checks the magnetic stripe reader as you pass the test card through the reader.

Diskette Verification: This program confirms the ability of the system to select a specific diskette drive, to read and write to a diskette inserted in that drive, and to display the results.

Disk Verification: This program confirms the ability of the system to select a specific disk drive, to read and write to that drive, and to display the results.

Printer Verification: This program prints a test pattern to verify the operation of the printer.

Communications Verification: This program checks the internal logic and line connections required for communications.

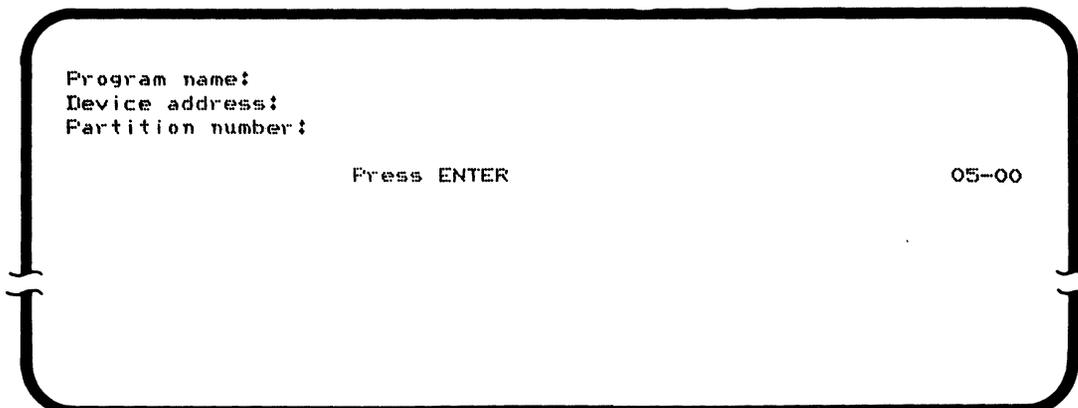
Second Application Program Microprocessor Verification: This program checks the internal logic of the second application program microprocessor.

Running the Verification Programs

If your IBM 5280 System is running, and you want to verify the operation of a specific keyboard, disk drive, diskette drive, printer, or communication facility, without disrupting the operation of other programs running on your system, do the following:

1. Insert the verification diskette into one of the diskette drives and close the diskette locking lever.

2. Make certain that the Load prompt is displayed as follows. (If you do not have the Load prompt on any screen, you may have to end a foreground job.)



3. Go to the appropriate chapters of this manual for the tests you choose to run, as follows:
 - "Chapter 3. Keyboard Verification Procedure (TKBD)" on page 13
 - "Chapter 4. Diskette Drive Verification Procedure (TDSK)" on page 21
 - "Chapter 5. Disk Drive Verification Procedure (THDSK)" on page 29
 - "Chapter 6. Printer Verification Procedure (TPRNT)" on page 33
 - "Chapter 7. Communications Verification Procedure (TCOM)" on page 39
 - "Chapter 8. Second Application Program Microprocessor Verification Procedure (TPROC)" on page 53

If your IBM 5280 System is not on, or if the Load prompt can not be displayed on the screen, an IPL must be performed using the verification diskette.

Go to "Chapter 2. Controller Internal Verification Procedure" on page 5 in this manual for instructions on running this procedure. If you run the verification procedures after doing the IPL from the verification diskette, the system is dedicated to running only verification procedures (that is, no other types of programs can run on the system).

DATA RECOVERY AND DUMPING PROCEDURES

The data recovery and dumping procedures, described in chapters 9 and 10 of this manual, allow you to do the following:

- Dump the error log information to the verification diskette
- Create an absolute dump diskette
- Take an absolute dump
- Print the data from an absolute dump diskette
- Recover data from a defective diskette or disk.

The following list identifies the programs on the verification diskette used to recover data and save the error log and main storage dump information:

- System Error Log Dump Program (TSYSLOG)
- Communications Error Log Dump Program (TCOMLOG)
- System Dump Program (SYSDUMP)
- Data Recovery Program (SYSRCVR).

System Error Log Dump Program: This program allows you to dump the system error log information to the verification diskette. The system error log can be located either in main storage or on disk.

Communications Error Log Dump Program: This program allows you to dump the communications error log information in main storage to the verification diskette.

System Dump Program: This program allows you to format a diskette to be used as an absolute dump diskette, then print data from the diskette once an absolute dump has been taken.

Data Recovery Program: This program allows you to recover data from a defective diskette or disk.

| CHAPTER 2. CONTROLLER INTERNAL VERIFICATION PROCEDURE

START

Before you begin the verification procedure, ensure that:

- The control unit Power switch is in the 0 (off) position.
- The Power switches are on for all devices, and the diskette drive locking levers are open.
- All diskettes have been removed from the diskette drives.
- If you have the Keylock feature, the key is not in the locked position.

| IPL ON THE IBM 5280 SYSTEM USING THE VERIFICATION DISKETTE

1. Obtain the verification diskette from one of the IBM binders shipped with the control unit (IBM 5285, 5286, or 5288).

Note: The diskette containing the verification procedures for your system may be labeled IBM 5280 SCP (vol. 2 of 2). You may receive a new verification diskette when updating to a new release or if changes are made to your system. Always use the diskette with the latest date.
2. Locate keyboard 0 (the indicators are displayed at this station during IPL).
3. Insert the verification diskette into the diskette drive. Be certain that the diskette is pushed all the way to the back of the drive.
4. Place the control unit Power switch in the | (On) position. This starts the internal checks for the system.
5. Close the diskette locking lever. When these checks have been satisfactorily completed, the system automatically loads the verification IPL program.

6. If the IPL program loads satisfactorily, the following prompt is displayed on the keyboard 0 display screen:

```
This is your 5280 Verification Program.  
  
Press ENTER to continue. 50-01
```

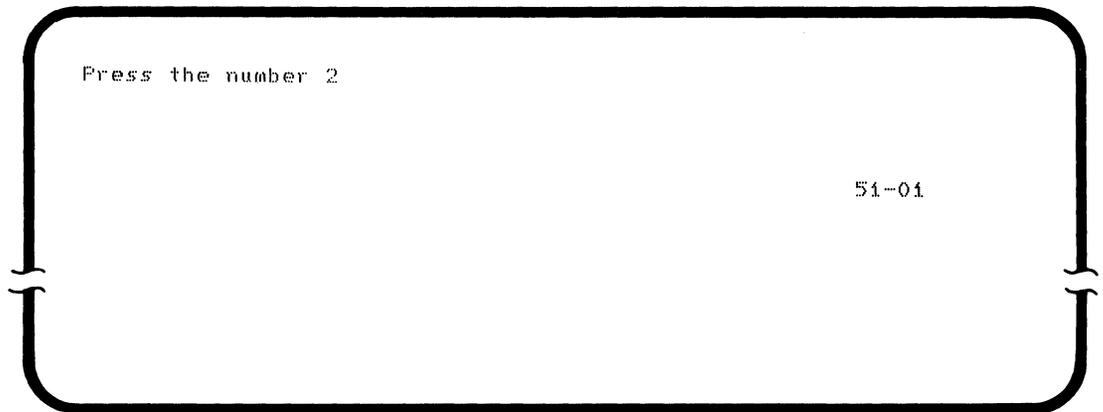
If this prompt does not appear, go to "BRANCH A" on page 9.

7. Press the ENTER key to continue. The next prompt shows how much I/O storage (display storage) is available and working on the system, and how many keyboards can be connected to the system. If this prompt does not appear, go through the checklist in "BRANCH A" on page 9, step A1.

```
Keyboard information for this system  
X      Total number of keyboards connected to this system  
  
XXX    Display storage size  
  
Press ENTER to continue 50-02
```

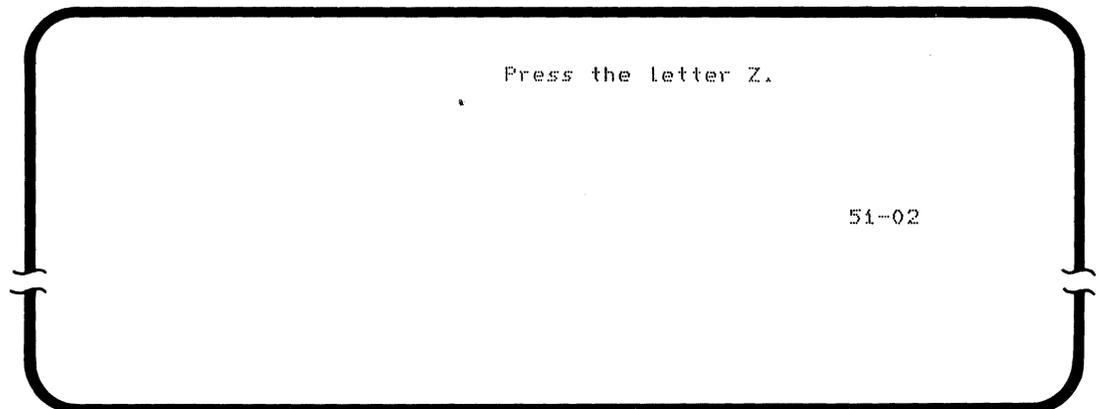
8. Press the ENTER key. The system initializes all attached datastations with a screen size of 480 and loads the partition load program.
9. After a short time, the partition load program is loaded. The next two displays, and your responses, tell the system what kind of keyboards are connected to your system.

- a. The first prompt displayed is:



Press the number 2; do not press the ENTER key. If your keyboard has two keys with the number 2 on the keytop, you may use either key.

- b. The prompt changes to:



Press the letter Z; do not press the ENTER key.

If you have trouble with your responses to either of these prompts or if the display does not change as it should, go to "BRANCH B" on page 11.

- c. After you have correctly responded to both prompts at keyboard 0 (the keyboard you are presently using), go to the next keyboard and repeat steps a and b. Continue doing this until you have responded from each keyboard that is attached to the system.

10. When the program finishes, the Load prompt is displayed:

This line appears only when
using the verification IPL.

Verification test in operation.

Program name:

Device address:

Partition number:

Press ENTER

50-00

11. When this prompt appears, enter the program name of the verification program you want to run. If you want to run all verification programs, go to the next chapter in this manual. If you want to run only selected verification programs, go to the chapters that deal with the programs you want to run.

Note: Verification programs should be the only programs run on a system that has been IPLed using the verification diskette.

BRANCH A

- A1. When you placed the Power switch in the | (on) position, did the display screens show a number of test patterns, and did the keyboards buzz?

Y N

| |

| Check the following:

- | • The Power switches on all devices are set to the | (On) position.
- | • All power cord plugs are plugged into receptacles.
- | • Power is available at each outlet. If you have power at the controller, the drive in use indicators come on when the controller Power switch is first turned on.
- | • Display, diskette/disk drive, and keyboard cables are connected properly.
- | • If you have the Keylock feature, the key is not turned to the locked position.
- | • Screen intensity knob is turned to the right as far as possible.

| If all these checks appear OK, place the control unit Power switch in the 0 (off) position and leave it off for at least 10 seconds. Go back to the beginning of this procedure ("START" on page 5) and try again, using another diskette drive. If this is the second time through this branch and all the checks appear to be all right, call your service representative.

- A2. Does your display screen have any indicators on? (The indicators are the boxes and dashes that appear on the upper right-hand side of your display screen. A rectangular box shows that the indicator is on; a dash shows that the indicator is off.)

Y N

| |

| Go to step A3 on page 10.

| Does your display screen have either six or two indicators on?

Y N

| |

| Call your service representative and report a power-on checkout failure.

| If you have six indicators on, go to step A2a on page 10.

| If you have two indicators on, go to step A2b on page 10.

A2a. With six indicators on, ensure that:

- The diskette is inserted properly.
- The verification diskette is being used.
- The diskette locking lever is closed.

Place the control unit Power switch in the 0 (off) position and leave it off for at least 10 seconds. Go back to the beginning of this procedure ("START" on page 5) and do the procedure again. If six indicators turn on again, try the procedure using a different diskette drive. If a different drive gives the same results, call your service representative and report a power-on checkout failure.

A2b. With two indicators on, something is wrong with the verification diskette. If you have another verification diskette, try this procedure again with the new verification diskette. If you do not have another verification diskette, call your service representative.

A3. Does the following prompt appear on your screen?

This is your 5280 Verification Program.

Press ENTER to continue.

50-01

Y N

| |
| Are any messages or error codes displayed (error codes are
| displayed on the top line of the display)?

| Y N

| | |
| | Call your service representative and report a power-on
| | checkout failure.

| |
| Check the IBM 5280 Message Manual. If the message
| action tells you to run the verification program, call your
| service representative and report the error code displayed.

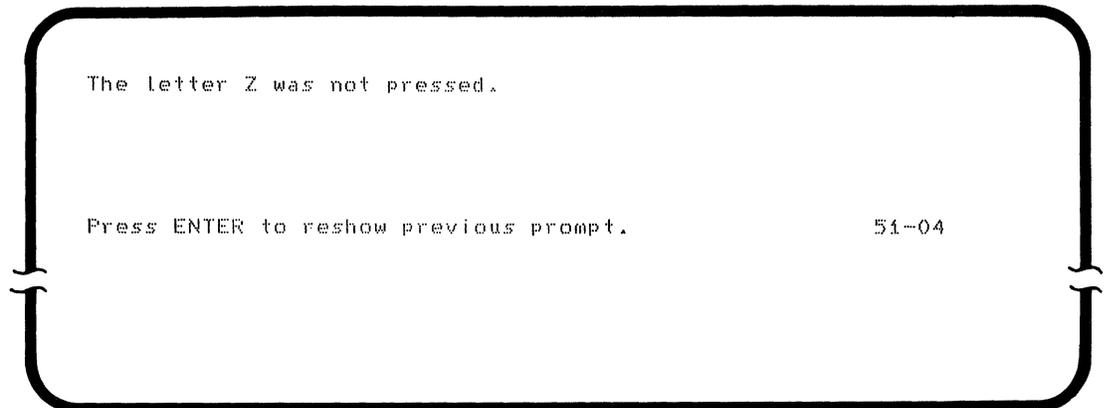
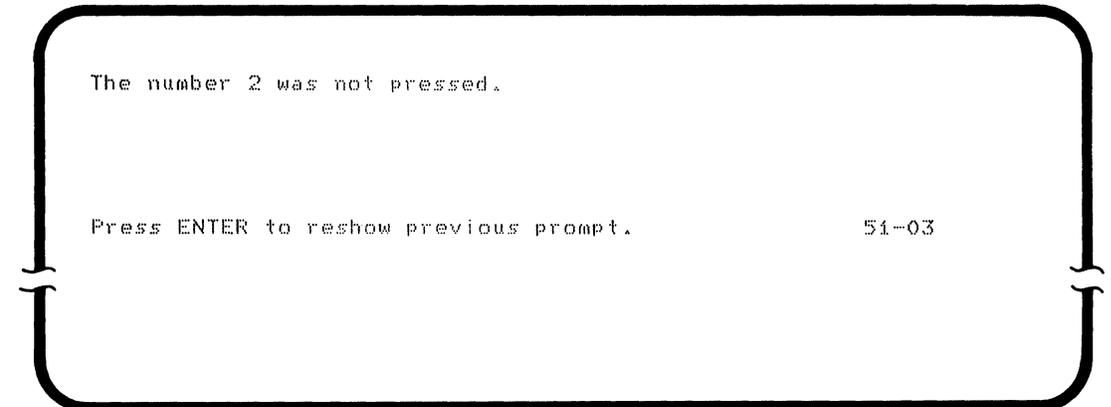
|
Return to the procedure for starting these programs, step 7 on
page 6.

END

BRANCH B

If you had trouble entering either the 2 or the Z on the previous two screens, check the following:

- If you entered something other than the character requested, one of the following prompts is displayed:



- If you have trouble entering the Z, you might have to press the Alpha Shift key to enter a Z.

If this problem occurs only on one keyboard, you might have a faulty keyboard, or the keyboard might be unplugged. Check the keyboard plug. If the plug appears to be all right, turn power off and exchange keyboards (that is, replace the failing unit with another one). If this action corrects the problem, the first keyboard is faulty. Call your service representative.

If you cannot do these steps at any keyboard, start this procedure again using another verification diskette.

END

CHAPTER 3. KEYBOARD VERIFICATION PROCEDURE (TKBD)

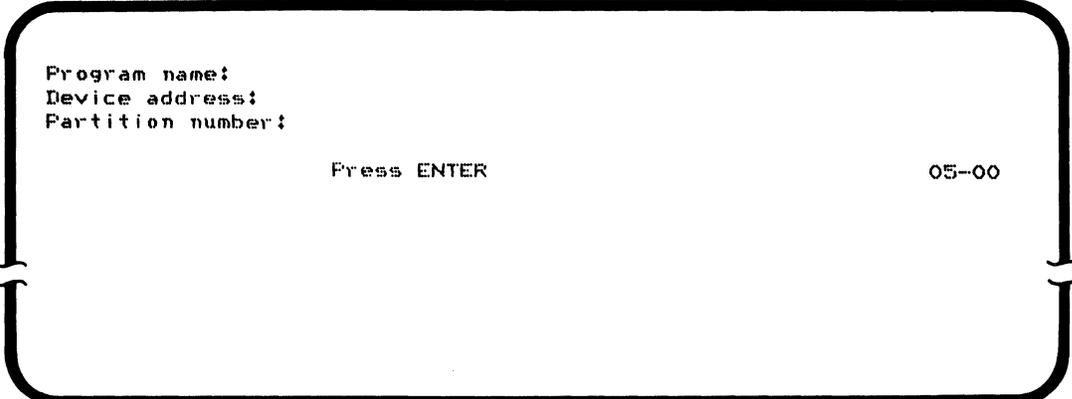
Use the keyboard verification procedure whenever you are:

- Having a problem with one or more keyboards or magnetic stripe readers
- Running the total verification package.

Test all keyboards and magnetic stripe readers before going to "Chapter 4. Diskette Drive Verification Procedure (TDSK)" on page 21.

START

1. If you do not already have a verification diskette in the drive you are going to use, do the following:
 - a. Open the diskette locking lever.
 - b. Insert the verification diskette into the drive. Be sure to push the diskette all the way to the back of the drive.
 - c. Close the diskette locking lever.
2. Make certain that the Load prompt is displayed as follows. (If you do not have the Load prompt on any screen, you may have to end a foreground job.)



The screenshot shows a terminal window with a thick black border. Inside, the text is as follows:

```
Program name:  
Device address:  
Partition number:  
  
Press ENTER                                05-00
```

3. Enter the program name TKBD and press the FIELD+ or the FIELD EXIT key. If you cannot enter the program name, go to "BRANCH C" on page 17, step C2.

4. Enter the address of the diskette drive containing the verification diskette.
5. Press the ENTER key. The following prompt is displayed if you have a magnetic stripe reader. If you do not have a magnetic stripe reader, go to "Part 1 (Keyboard)."

```
Workstation test
Options are
  1. Keyboard
  2. Magnetic stripe reader
Select option:      Press ENTER                               52-01
```

6. Select the option for the test you want, and press the ENTER key. If you choose option 1, Keyboard, continue in "Part 1 (Keyboard)" If you want to test only the magnetic stripe reader, option 2, go to "Part 2 (Magnetic Stripe Reader)" on page 16 of this procedure.

PART 1 (KEYBOARD)

1. The keyboard test program is loaded into the system. The keyboard and display test determines if data from the keyboard is being received by the system.
2. After the program is loaded, the following message is displayed:

```
Enter characters on keyboard and observe display. If
these do not correspond refer to manual.

Press ENTER to terminate.                                     52-03
```

3. This display enables you to enter characters from the keyboard and to verify that each character you enter is correctly received and displayed by the system. If you are running this program using the verification IPL, only the alphabetic A through Z, numerics 0 through 9, and the blank (spacebar) should be tested. Some of the special characters might not function correctly now.
4. Enter each character you intend to verify, and observe the display. Try to enter each character that is available, for example:

ABCDEF GHIJKLMNOPQRSTUVWXYZ 0123456789
5. If all characters entered correctly, press the ENTER key. If some of the characters did not enter as you expected, go to "BRANCH C" on page 17.
6. The following prompt is displayed:

```
Test complete
Options are
  1. Restart
  2. Exit
Select option:      Press ENTER                      52-78
```

7. You may test other keyboards and any magnetic stripe readers by selecting option 2 which takes you back to the prompt for program name. At the next keyboard, repeat "Part 1 (Keyboard)" on page 14. Continue repeating this part until you have completed testing all keyboards.

If you select option 1, Restart:

- If you have the magnetic stripe reader, the program returns to the Workstation Test display. You can then choose to test other keyboards or magnetic stripe readers.
- If you do not have the magnetic stripe reader, the program returns to the Load prompt. To continue testing keyboards, enter the program name TKBD, and continue through the keyboard verification procedure.

PART 2 (MAGNETIC STRIPE READER)

1. After you select option 2 of the work station test and press the ENTER key, the magnetic stripe reader test program is loaded into the system. This test determines if the magnetic stripe reader is correctly reading data and sending the data to the system. This test must be run from the keyboard that is associated with the magnetic stripe reader being tested.
2. The following prompt is displayed on the screen:

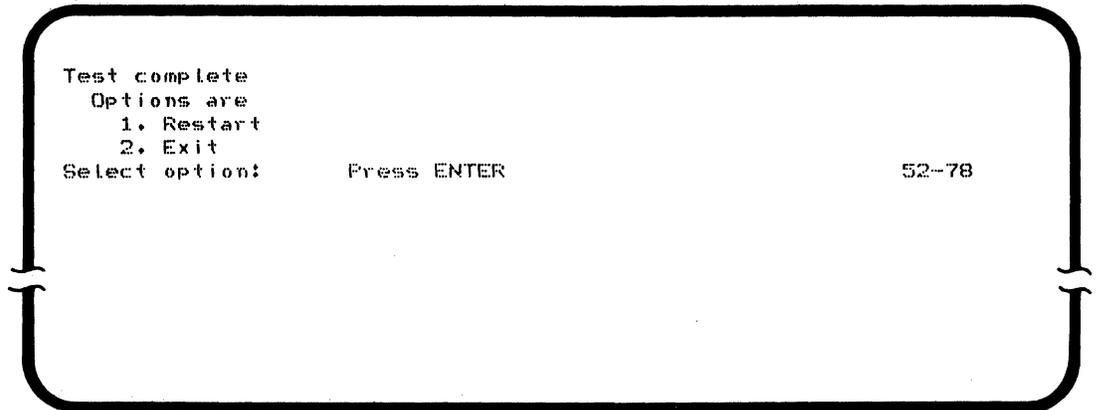
```
Magnetic stripe reader test  
Run card through reader.                               52-04
```

3. Obtain the magnetic stripe test card from the IBM binder.
4. Position the magnetic stripe reader so that the wide end of the slot is to your right.
5. Place the test card to be read so that the magnetic stripe is at the bottom of the card and facing you.
6. Pass the card through the reader from right to left.
7. If the system successfully reads the card, the following prompt is displayed:

```
Magnetic stripe reader tested  
Stripe was read correctly.  
  
Press ENTER                                           52-05
```

If the system does not successfully read the card, go to "Branch D" on page 19.

8. Press the ENTER key. The following prompt is displayed:



9. If you select option 1, you may run the same test again. You may test any keyboard and any other magnetic stripe readers by selecting option 2, which takes you back to the prompt for program name. You may then repeat the procedure until you have completed testing all keyboards and magnetic stripe readers.

BRANCH C

If some of the characters you entered from the keyboard were not correctly displayed, check the following:

- C1. Press the  key (Field Backspace) to move the cursor back to the beginning of the field. Try entering the characters again. If the information is correctly received this time, return to the branch point (step 5 on page 15) and continue the procedure.

- C2. If the information is still incorrectly received, do the following:

Do you have another keyboard like the one you are running the TKBD test from?

Y N

| |

| Did you run the verification IPL program as described in Chapter 2 of this manual?

| Y N

| |

| | Go to "Chapter 2" on page 5 and run the verification IPL program; then run TKBD.

| |

| Call your service representative.

|

End all jobs that are running on the system. Place the Power switch in the 0 (off) position. Check the keyboard cables. If the cables are properly connected, disconnect the keyboard you are using and, replace it with another one. When you have the new keyboard plugged in, go to "Chapter 2" on page 5 and perform the verification IPL.

- C3. Try again to enter characters from the keyboard, and observe them on the display.

Are the characters you entered correctly displayed?

Y N

| |

| Did you run the verification IPL program as described in "Chapter 2" on page 5.

| Y N

| |

| | Go to "Chapter 2" on page 5 and run the verification IPL program; then run TKBD.

| |

| Call your service representative.

|

The first keyboard you were using is faulty. Notify your service representative of the faulty keyboard, and continue with the keyboard verification test. Return to the branch point, step 5 on page 15.

END

BRANCH D

- D1. If the magnetic stripe reader did not successfully read the card, one of the following prompts is displayed:

```
Magnetic stripe reader tested  
Stripe reader error
```

```
Retry badge or Press ENTER to end test.
```

52-06

```
Magnetic stripe reader tested  
Badge data miscompare
```

```
Press ENTER
```

52-07

- D2. Retry the card. If the same error occurs, try another test card if you have one. If neither card works, call your service representative.
- D3. Press the ENTER key. Return to the procedure for testing the magnetic stripe reader, step 8 on page 17.
- D4. If neither of the above screens appears, the magnetic stripe reader is failing. Call your service representative.

END

CHAPTER 4. DISKETTE DRIVE VERIFICATION PROCEDURE (TDSK)

Use the diskette drive verification procedure whenever you are:

- Having a problem with one or more diskette drives
- Running the total verification package.

START

The diskette verification program can be loaded either from the diskette drive you want to test, or from another diskette drive. If you are experiencing problems with one diskette drive, you may want to load the verification program from another drive, and then run the verification tests on the drive that is experiencing problems.

1. If you do not already have a verification diskette in the drive you are going to use, do the following:
 - a. Open the diskette locking lever.
 - b. Insert the verification diskette into the drive. Be sure to push the diskette all the way to the back of the drive.
 - c. Close the diskette locking lever.
2. Make certain that the Load prompt is displayed as follows. (If you do not have the Load prompt on any screen, you may have to end a foreground job.)

```
Program name:  
Device address:  
Partition number:  
  
Press ENTER  
  
05-00
```

3. Enter the program name TDSK, and press the FIELD+ or the FIELD EXIT key.

4. Enter the address of the diskette drive containing the verification diskette.
5. Press the ENTER key. The diskette verification program is loaded into the system. The following prompt is displayed:

```
What type of drive do you want to test?  
Options are  
1. 1 --- Single density  
2. 2D - Double density  
Select option:      Press ENTER  
53-01
```

If this display does not appear, go to "Branch E" on page 28.

6. Select the option for the type of diskette drive you want to test. (The two characters on the sticker with the device address indicate the drive type.)
7. Press the ENTER key.
8. The following prompt is displayed on the screen:

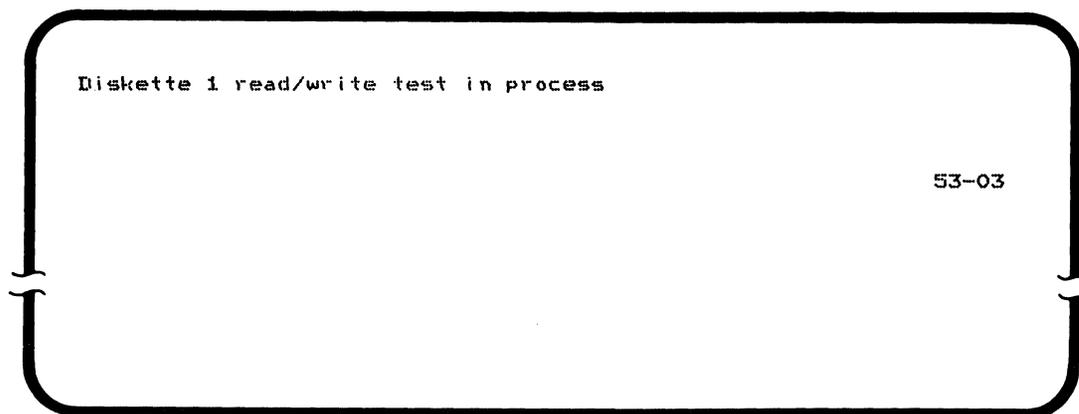
```
Insert verification diskette in drive to be tested and enter  
device address:  
  
Press ENTER  
53-02
```

9. Move the verification diskette to the drive to be tested if necessary, and enter the device address of the diskette drive to be tested. Press the ENTER key.

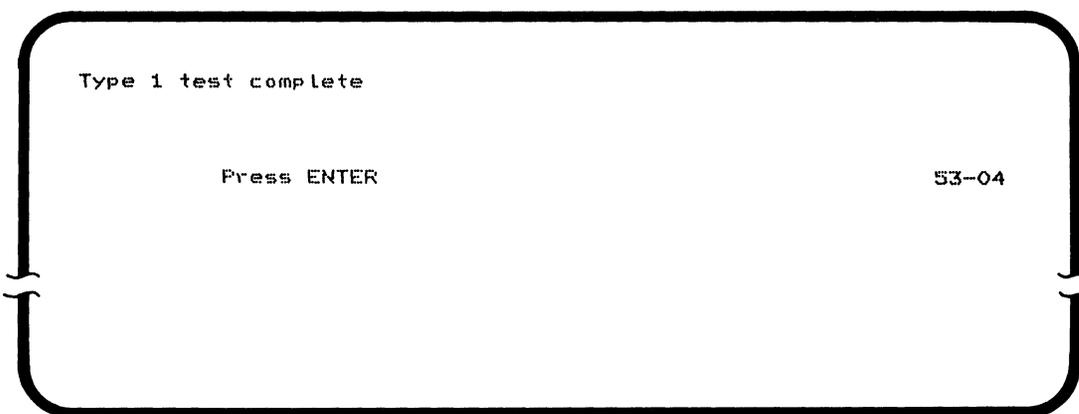
10. If you selected option 1, Single density, when asked for the drive type, continue in this procedure by doing "Part 1 (Single Density)." If you selected option 2, Double density, go to "Part 2 (Double Density)" on page 25.

PART 1 (SINGLE DENSITY)

1. The program tests the drive by reading from, and writing to, the diskette. While the program is running, the following prompt is on the screen:



2. If the test runs successfully, the following prompt is displayed:



If the test does not run successfully, go to "Branch E" on page 28.

3. Press the ENTER key. The following prompt is displayed:

```
Test complete
Options are
 1. Restart
 2. Exit
Select option:      Press ENTER          53-78
```

4. You may test any other diskette drive by selecting option 1, which takes you back to the following display:

```
What type of drive do you want to test?
Options are
 1. 1 --- Single density
 2. 2D - Double density
Select option:      Press ENTER          53-01
```

When you have finished testing diskette drives, select option 2 on the Test Complete prompt which returns you to the prompt for program name.

PART 2 (DOUBLE DENSITY)

1. The program tests a 2D drive by first testing its ability to read from, and write to, a diskette 1. The verification diskette is used for the type 1 test. If you select option 2 and actually have a type 1 drive, the program does the test for the type 1 diskette. If you try to continue with a type 2 diskette, the system detects an error. While this part of the test is running, the following prompt is on the screen:

```
Diskette 1 read/write test in process
```

```
53-03
```

2. If this test runs successfully, the following prompt is displayed:

```
Type 1 test complete  
Remove the verification diskette.  
Insert a blank diskette 2D in the drive  
being tested.
```

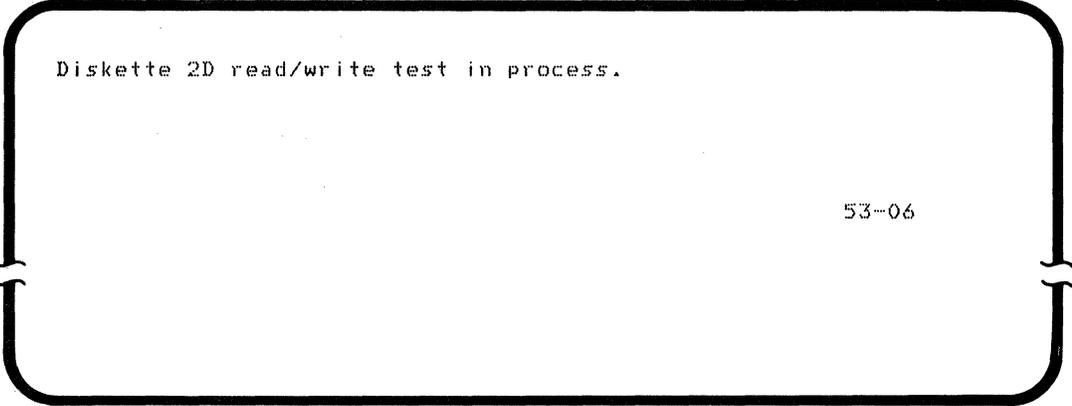
```
Press ENTER
```

```
53-05
```

If this test does not run successfully, go to "Branch E" on page 28.

3. Remove the verification diskette from the diskette drive being tested and replace it with a blank 2D diskette. This blank diskette can be either a diskette that has no data written on it, or one that has data which you no longer wish to keep.

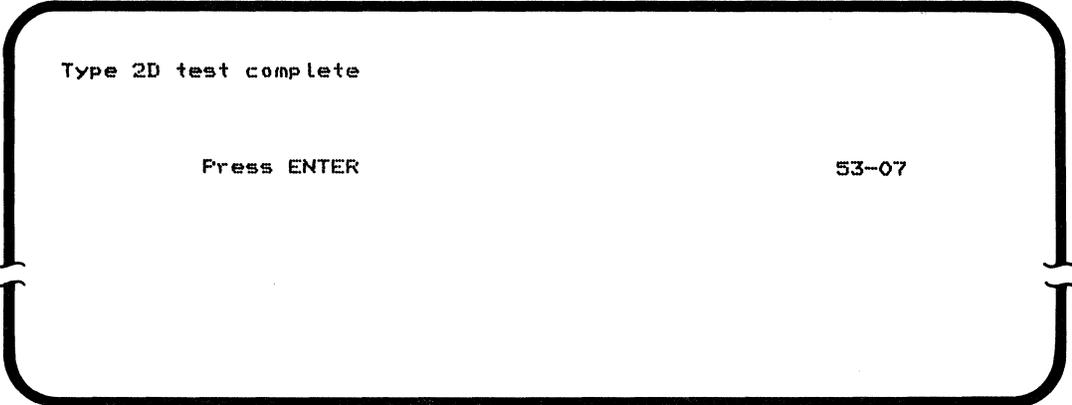
4. Press the ENTER key. The program tests the ability of the drive to read from, and write to, a diskette 2D. While the test is running, the following prompt is on the screen:



Diskette 2D read/write test in process.

53-06

5. If the test runs successfully, the following prompt is displayed:



Type 2D test complete

Press ENTER

53-07

If the test does not run successfully, go to "Branch E" on page 28.

6. Press the ENTER key. The following prompt is displayed:

```
Test complete
Options are
 1. Restart
 2. Exit
Select option:      Press ENTER                               53-78
```

7. You may test any other diskette drive by selecting option 1, which takes you back to the following display:

```
What type of drive do you want to test?
Options are
 1. 1 -- Single density
 2. 2D - Double density
Select option:      Press ENTER                               53-01
```

When you have finished testing diskette drives, select option 2 on the Test Complete prompt which returns you to the prompt for program name.

BRANCH E

If any of the diskette tests do not run successfully, the screen shows either a four-digit error code or an error message. Try rerunning the test using another verification or 2D diskette, depending on which the test failed. If the problem does not recur, the first diskette is bad. If the same problem occurs, the diskette drive is failing. If an error code appears, look up the code in the IBM 5280 Message Manual. If the description of the message directs you to run the verification procedure, call your service representative. Run TSYSLLOG or TCOMLOG, as appropriate.

If an error message appears on the screen, record the message and call your service representative. Relay this message to the service representative. For example, if the error occurred while reading track 73, the error message reads:

Miscompare on track 73

END

CHAPTER 5. DISK DRIVE VERIFICATION PROCEDURE (THDSK)

Use the disk drive verification procedure whenever you are:

- Having a problem with one or more disk drives
- Running the total verification package.

START

1. If you do not already have a verification diskette in the drive you are going to use, do the following:
 - a. Open the diskette locking lever.
 - b. Insert the verification diskette into the drive. Be sure to push the diskette all the way to the back of the drive.
 - c. Close the diskette locking lever.
2. Make certain that the Load prompt is displayed as follows. (If you do not have the Load prompt on any screen, you may have to end a foreground job.)

```
Program name:  
Device address:  
Partition number:  
  
Press ENTER                                05-00
```

3. Enter the program name THDSK, and press the FIELD+ or the FIELD EXIT key.
4. Enter the address of the diskette drive containing the verification diskette.

5. Press the ENTER key. The disk verification program is loaded into the system. The following prompt is displayed:

```
Disk drive verification program.  
Enter device address of disk to be tested:  
Press Enter
```

48-01

If this display does not appear, go to "Branch F" on page 32.

6. Enter the address of the disk drive to be tested.
7. Press the ENTER key.
8. The following prompt is displayed:

```
Disk read/write test in process.
```

48-02

9. When the test is complete, the following prompt is displayed:

```
Test complete
Options are
  1. Restart
  2. Exit
Select option:      Press ENTER                      48-78
```

If this display does not appear, go to "Branch F" on page 32.

10. You may test any other disk drive by selecting option 1, which takes you back to the following display:

```
Disk drive verification program.
Enter device address of disk to be tested:
Press Enter                                          48-01
```

When you have finished testing disk drives, select option 2 on the Test Complete prompt which returns you to the Load prompt.

BRANCH F

If any of the disk tests do not run successfully, the screen shows either a four-digit error code or an error message. Try rerunning the test. If the same problem occurs, the disk drive is failing. If an error code appears, look up the code in the IBM 5280 Message Manual. If the description of the message directs you to run the verification procedure, call your service representative. Run TSYSLLOG or TCOMLOG, as appropriate.

If an error message appears on the screen, record the message and call your service representative. Relay this message to the service representative.

END

| CHAPTER 6. PRINTER VERIFICATION PROCEDURE (TPRNT)

Use the printer verification procedure whenever you are:

- Having a problem with one or more printers
- Running the total verification package.

START

The printer verification program verifies the operation of your printer. Any printer can be tested from any keyboard. It is usually most convenient to test the printer from the closest work station.

1. If you do not already have a verification diskette in the drive you are going to use, do the following:
 - a. Open the diskette locking lever.
 - b. Insert the verification diskette into the drive. Be sure to push the diskette all the way to the back of the drive.
 - c. Close the diskette locking lever.
2. Check the printer to make certain that:
 - a. The power is on.
 - b. Forms are inserted (must be 132-column wide paper).
 - c. The Ready light is on. (Ready light is not present on all machine types.)

If the Ready light is present and not on, you may need to press START, or press STOP and then START, on the printer, to get the Ready light to come on.

- d. If the printer is connected to an IBM 5288 using the Cable Thru feature, do the following:
 - 1) Make sure that the input/output cables are connected properly. (These connections are described in IBM 5280 User's Setup Procedures under "IBM 5288 Setup Procedure," steps 14 through 16.)
 - 2) Make sure that the address switches are set correctly. (The switch settings are described in IBM 5280 User's Setup Procedures under "IBM 5288 Setup Procedure," steps 17 and 18.)

- 3) Make sure that the terminator switches are set correctly. The terminator switch on the last printer must be set to 1. All the others must be set to 2. (The terminator switch settings are described in IBM 5280 User's Setup Procedures under "IBM 5288 Setup Procedure," step 19.)

3. Make certain that the Load prompt is displayed as follows. (If you do not have the Load prompt on any screen, you may have to end a foreground job.)

```
Program name:  
Device address:  
Partition number:  
  
Press ENTER                                05-00
```

4. Enter the program name TPRNT, and press the FIELD+ or the FIELD EXIT key.
5. Enter the address of the diskette drive containing the verification diskette.
6. Press the ENTER key. The printer verification program is loaded into the system.
7. The following prompt is displayed:

```
Printer test.  
Specify the following  
Printer type:  
Printer address:  
Press ENTER                                54-01
```

8. Enter the printer type. This information can be found on the front panel of the printer. Press the FIELD+ or the FIELD EXIT key.
9. Enter the address of the printer. This address is the number found on the sticker on the front of the machine.
10. Press the ENTER key. The following prompt is displayed:

```
Do you want continuous operation?  
Options are  
  1. Yes  
  2. No  
Select option:  2 Press ENTER
```

54-02

11. This display automatically selects option 2 unless you override it and enter a 1. Option 1 causes the printer to print continuously. This option is useful if you are having problems with paper feeding and want to cause the printer to run until the problem recurs. The printer can be stopped by pressing the CANCEL key on the printer or by pressing the CMD key and the End of Job key on the keyboard. This causes the completion prompt to appear; you can then choose either to restart or exit the test.
12. Option 2 causes the printer test to run once and then stop. When the printer test is running, the following prompt is displayed on the screen:

```
TPRNT in process.
```

54-03

13. When the test is complete, the following prompt is displayed:

```
Test complete.  
Options are  
  1. Restart  
  2. Exit  
Select option:      _ Press ENTER                    54-79
```

| If this prompt does not appear, go to "BRANCH G."

14. Go to the printer and visually check that the correct test pattern was printed. The correct test patterns for the printers are shown on the following pages. If the pattern is not correct, call your service representative.

15. You may test any other printer by selecting option 1 of the Test Complete prompt, which takes you back to the following display:

```
Printer test.  
Specify the following  
Printer type:  
Printer address:  
Press ENTER                    54-01
```

When you have finished testing the printers, select option 2 on the Test Complete prompt, which returns you to the Load prompt.

| BRANCH G

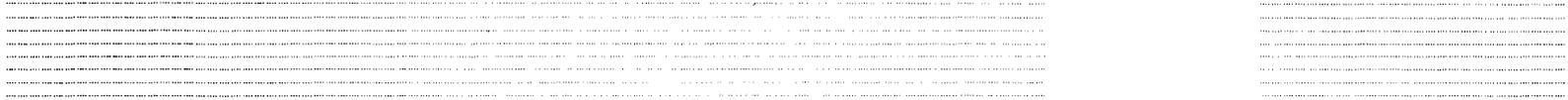
If the Test Complete prompt does not appear, the test was not successful. In this case, the screen flashes and an error code is displayed. Look up this code in the IBM 5280 Message Manual. If the explanation directs you to run the verification procedures, record the error code, run TSYSLLOG or TCOMLOG as appropriate, and call your service representative.

END

Figure 1 (Part 2 of 2). Printer Test Pattern

Note: This test pattern appears only on IBM 5224 and IBM 5225 printers.

ABCDEFGHIJKLMNQRSTUWXYZ	0123456789	アイロカキワサツトニシホキレ	E.(+(+&1\$*)?-/1,X_)?:#e="H"11	ABCDEFGHIJKLMNQRSTUWXYZ	0123456789	アイロカキワサツトニシホキレ
BCDEFGHIJKLMNQRSTUWXYZ	0123456789	アイロカキワサツトニシホキレ	E.(+(+&1\$*)?-/1,X_)?:#e="H"11	ABCDEFGHIJKLMNQRSTUWXYZ	0123456789	アイロカキワサツトニシホキレ
CDEFGHIJKLMNQRSTUWXYZ	0123456789	アイロカキワサツトニシホキレ	E.(+(+&1\$*)?-/1,X_)?:#e="H"11	ABCDEFGHIJKLMNQRSTUWXYZ	0123456789	アイロカキワサツトニシホキレ
DEFGHIJKLMNQRSTUWXYZ	0123456789	アイロカキワサツトニシホキレ	E.(+(+&1\$*)?-/1,X_)?:#e="H"11	ABCDEFGHIJKLMNQRSTUWXYZ	0123456789	アイロカキワサツトニシホキレ
EFGHIJKLMNQRSTUWXYZ	0123456789	アイロカキワサツトニシホキレ	E.(+(+&1\$*)?-/1,X_)?:#e="H"11	ABCDEFGHIJKLMNQRSTUWXYZ	0123456789	アイロカキワサツトニシホキレ
FGHIJKLMNQRSTUWXYZ	0123456789	アイロカキワサツトニシホキレ	E.(+(+&1\$*)?-/1,X_)?:#e="H"11	ABCDEFGHIJKLMNQRSTUWXYZ	0123456789	アイロカキワサツトニシホキレ
GHIJKLMNQRSTUWXYZ	0123456789	アイロカキワサツトニシホキレ	E.(+(+&1\$*)?-/1,X_)?:#e="H"11	ABCDEFGHIJKLMNQRSTUWXYZ	0123456789	アイロカキワサツトニシホキレ
HJKLMNQRSTUWXYZ	0123456789	アイロカキワサツトニシホキレ	E.(+(+&1\$*)?-/1,X_)?:#e="H"11	ABCDEFGHIJKLMNQRSTUWXYZ	0123456789	アイロカキワサツトニシホキレ
IJKLMNQRSTUWXYZ	0123456789	アイロカキワサツトニシホキレ	E.(+(+&1\$*)?-/1,X_)?:#e="H"11	ABCDEFGHIJKLMNQRSTUWXYZ	0123456789	アイロカキワサツトニシホキレ



JKLMNQRSTUWXYZ	0123456789	abcdefghijklmnopqrstuvwxyz	I.(+(+&1\$*)?-/1,X_)?:#e="H"11	ABCDEFGHIJKLMNQRSTUWXYZ	0123456789	abcdefghijklmnopqrstuvwxyz
KL MNOPQRSTUWXYZ	0123456789	abcdefghijklmnopqrstuvwxyz	I.(+(+&1\$*)?-/1,X_)?:#e="H"11	ABCDEFGHIJKLMNQRSTUWXYZ	0123456789	abcdefghijklmnopqrstuvwxyz
LMN OPQRSTUWXYZ	0123456789	abcdefghijklmnopqrstuvwxyz	I.(+(+&1\$*)?-/1,X_)?:#e="H"11	ABCDEFGHIJKLMNQRSTUWXYZ	0123456789	abcdefghijklmnopqrstuvwxyz
MN OPQRSTUWXYZ	0123456789	abcdefghijklmnopqrstuvwxyz	I.(+(+&1\$*)?-/1,X_)?:#e="H"11	ABCDEFGHIJKLMNQRSTUWXYZ	0123456789	abcdefghijklmnopqrstuvwxyz
NO PQRSTUWXYZ	0123456789	abcdefghijklmnopqrstuvwxyz	I.(+(+&1\$*)?-/1,X_)?:#e="H"11	ABCDEFGHIJKLMNQRSTUWXYZ	0123456789	abcdefghijklmnopqrstuvwxyz
OPQRSTUWXYZ	0123456789	abcdefghijklmnopqrstuvwxyz	I.(+(+&1\$*)?-/1,X_)?:#e="H"11	ABCDEFGHIJKLMNQRSTUWXYZ	0123456789	abcdefghijklmnopqrstuvwxyz
PQRSTUWXYZ	0123456789	abcdefghijklmnopqrstuvwxyz	I.(+(+&1\$*)?-/1,X_)?:#e="H"11	ABCDEFGHIJKLMNQRSTUWXYZ	0123456789	abcdefghijklmnopqrstuvwxyz
QRSTUWXYZ	0123456789	abcdefghijklmnopqrstuvwxyz	I.(+(+&1\$*)?-/1,X_)?:#e="H"11	ABCDEFGHIJKLMNQRSTUWXYZ	0123456789	abcdefghijklmnopqrstuvwxyz
RSTUWXYZ	0123456789	abcdefghijklmnopqrstuvwxyz	I.(+(+&1\$*)?-/1,X_)?:#e="H"11	ABCDEFGHIJKLMNQRSTUWXYZ	0123456789	abcdefghijklmnopqrstuvwxyz

| CHAPTER 7. COMMUNICATIONS VERIFICATION PROCEDURE (TCOM)

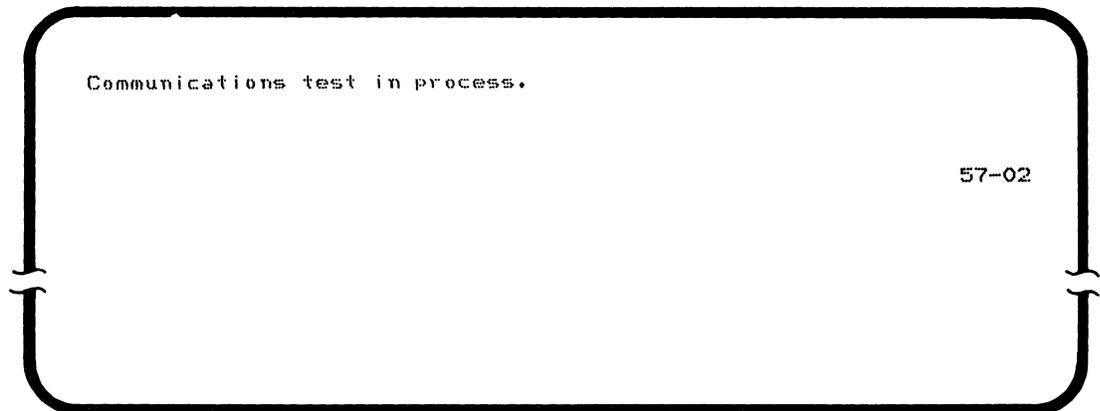
Use the communications verifications procedure whenever you are:

- Having a problem with the communication adapter
- Running the total verification package.

START

The communications verification program verifies the operation of your communications adapter. The adapter can be tested from any keyboard.

While the communications verification program is running, the following prompt appears on the screen:



This display may stay on the screen for as long as 30 seconds. If the display does not change after that time, an error has occurred from which the system cannot recover. Call your service representative.

If, while the communications verification program is running, an error code appears on the screen, refer to the IBM 5280 Message Manual for further information.

If the communications test runs successfully and you are still having problems with communications, make sure that your communications configuration record is correct before calling your service representative.

1. If you do not already have a verification diskette in the drive you are going to use, do the following:
 - a. Open the diskette locking lever.
 - b. Insert the verification diskette into the drive. Be sure to push the diskette all the way to the back of the drive.
 - c. Close the diskette locking lever.
2. If the Keylock feature is installed, the key must be turned to the left.
3. Make certain that the Load prompt is displayed as follows. (If you do not have the Load prompt on any screen, you may have to end a foreground job.)

```
Program name:  
Device address:  
Partition number:
```

Press ENTER

05-00

4. Enter the program name TCOM, and press the FIELD+ or the FIELD EXIT key.
5. Enter the address of the diskette drive containing the verification diskette.
6. Press the ENTER key. The communications verification program is loaded into the system.

7. The following prompt is displayed:

```
Select feature type
Options are
  1. EIA      3. Integrated modem
  2. DDSA
Select option:      _ Press ENTER                               57-01
```

8. Select the appropriate option for the type of communications feature you have. Press the ENTER key. Then go to the part of this procedure for the option you selected:

Option 1—go to "Part 1 (EIA)"
Option 2—go to "Part 2 (DDSA)" on page 47
Option 3—go to "Part 3 (Integrated Modem)" on page 50

PART 1 (EIA)

1. The following prompt is displayed on the screen:

```
Is the communications cable attached to
an IBM modem?
Options are
  1. Yes      2. No
Select option:      2 Press ENTER                               57-06
```

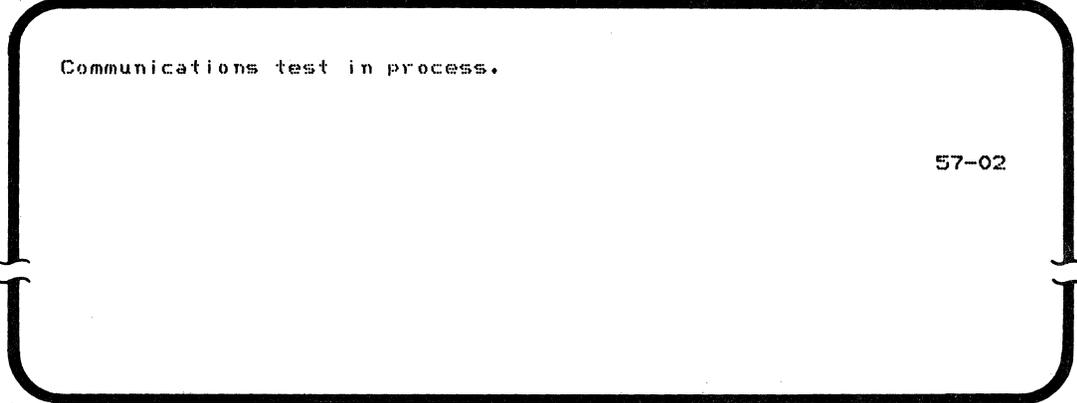
2. Select the correct option and press the ENTER key. Option 2 is selected unless you select option 1. If option 2 is selected, go to step 5. If option 1 is selected, continue with step 3.

3. If option 1, IBM modem, is selected, the test is run using the IBM modem. Be sure the modem is set up as follows:

Note: Not all the settings may be applicable.

- Leased line selected
- Test/Operate switch set to Operate
- Power switch set to On
- Talk/Data switch turned to Data
- Power light on
- Ready light or Operate light on.

While the test is running, the following prompt appears on the screen:



Communications test in process.

57-02

4. If the test runs successfully using the IBM modem, the Test Complete prompt is displayed. You may choose to restart or exit the test.

5. If option 2, non-IBM modem, is chosen in step 2, the Communications test in process prompt appears briefly and then the following prompt is displayed:

```
Does the communications cable have
a "TEST/OPERATE" switch? (see manual)
Options are
  1. Yes      2. No
Select option:      2 Press ENTER
```

57-03

6. Option 2 is selected unless you select option 1. If option 2, No, is selected, go to step 14. If option 1, Yes, is chosen, the following display is presented:

```
Turn the communication cable switch to
the "TEST" position.
```

```
Press ENTER to continue
```

57-04

7. Turn the communications cable switch to the TEST position and press the ENTER key.

8. The following prompt is displayed:

Communications test in process.

57-02

9. If the test does not run successfully, an error code appears on the screen. See the IBM 5280 Message Manual for further information.
10. After the test has completed, the following prompt is displayed:

Turn the communication cable switch to
the "OPERATE" position.

Press ENTER to continue

57-05

11. After returning the switch to the OPERATE position, press the ENTER key.

12. If the test does not run successfully, an error code appears on the display screen. See the IBM 5280 Message Manual for more information. If the test completes successfully, the following prompt is displayed:

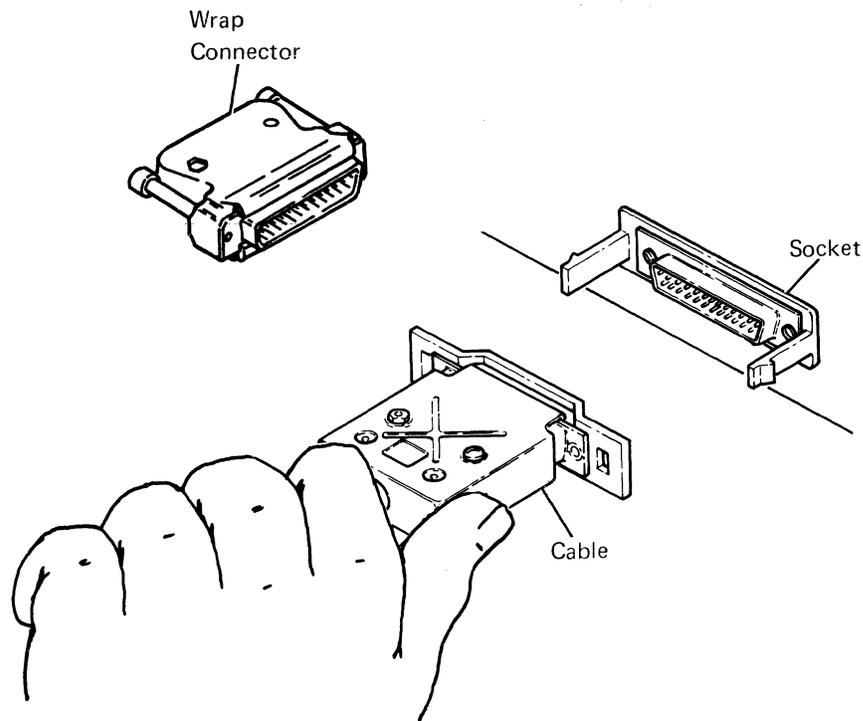
```
Test complete.  
Options are  
  1. Restart  
  2. Exit  
Select option:      2 Press ENTER      57-79
```

13. Select option 2 to end the test, or select option 1 to run the test again.
14. If option 2, No TEST/OPERATE switch, is selected on prompt 57-03, the following prompt is displayed:

```
Prepare the wrap connector. (see manual)  
  
Press ENTER to continue      57-09
```

Obtain the wrap connector from the Verification binder. Disconnect the communications cable from the modem. Put the wrap connector on the end of the cable. Press the ENTER key.

15. If you encounter an error while running this test, remove the connector from the communications socket on the back of the controller and replace the cable with the wrap connector as shown.



16. Press the ENTER key and restart the test.
17. If the test runs successfully with the connector on the back of the controller, call your service representative and relay this information.

18. If the test completes successfully, the following prompt is displayed:

```
Test complete.  
Options are  
  1. Restart  
  2. Exit  
Select option:      2 Press ENTER      57-79
```

19. Remove the wrap connector from the back of the machine and replace the cable. You can then choose either to end the test or to run the test again.
20. Replace the wrap connector in the Verification binder.

PART 2 (DDSA)

1. If option 2, DDSA, is selected on the Select feature prompt (57-01), the following prompt is displayed:

```
Prepare the wrap connector. (see manual)  
  
Press ENTER to continue      57-09
```

2. Obtain the 15-pin wrap connector from the Verification binder. The binder contains two connectors. Use the 15-pin connector for this portion of the test. Disconnect the cable from the channel service unit (CSU). Put the wrap connector on the end of the cable. Press the ENTER key.

3. While the communications test is running, the following prompt appears on the screen:

Communications test in process.

57-02

4. If the test is successful, the following prompt is displayed:

Test complete.

Options are

1. Restart

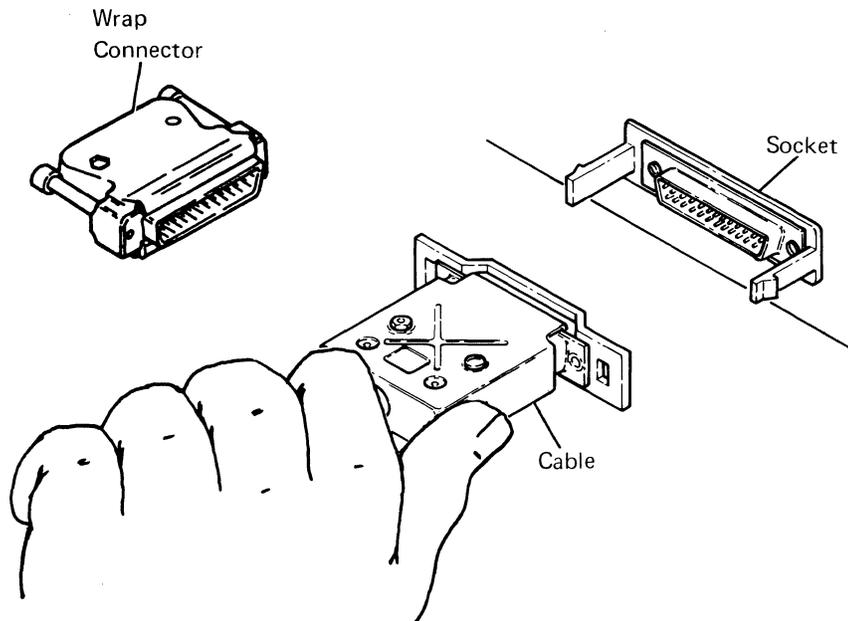
2. Exit

Select option:

2 Press ENTER

57-79

5. If you encounter an error while running this test, disconnect the cable from the back of the controller and replace the cable with the 25-pin wrap connector from the Verification binder as shown.



6. Press the ENTER key and restart the test.
7. If the test runs successfully with the connector on the back of the controller, call your service representative and relay this information.
8. Remove the wrap connector from the back of the machine and replace the cable. You can then choose either to restart or exit the test.
9. Replace the wrap connector in the Verification binder.

PART 3 (INTEGRATED MODEM)

1. If option 3, Integrated modem, is selected on the Select feature prompt (57-01), the communications test starts running and the following prompt is displayed:

```
Communications test in process.

57-02
```

2. When this portion of the test completes, the following prompt is displayed on the screen:

```
Does your communication have
switched network backup?
Options are
  1. Yes      2. No
Select option:      2 Press ENTER

57-07
```

3. Select the appropriate option and press the ENTER key.
4. If option 2, No, is selected, the test complete prompt is displayed. If option 1, Yes, is selected, the test is run with switched network backup on. The Communications test in process prompt appears while the test is running.

5. If the test completes successfully, the following prompt is displayed on the screen:

```
Test complete.  
Options are  
  1. Restart  
  2. Exit  
Select option:      2 Press ENTER      57-79
```

6. You can then choose either to restart or exit the test.

CHAPTER 8. SECOND APPLICATION PROGRAM MICROPROCESSOR VERIFICATION PROCEDURE (TPROC)

Use the second application program microprocessor verification procedure if you have this feature installed and you are:

- Having a problem with one or more programs not running to completion
- Having a problem with the system being slow to respond
- Running the total verification package.

START

The second application program microprocessor verification procedure verifies the operation of this feature.

1. If you do not already have a verification diskette in the drive you are going to use, do the following:
 - a. Open the diskette locking the lever.
 - b. Insert the verification diskette into the drive. Be sure to push the diskette all the way to the back of the drive.
 - c. Close the diskette locking lever.
2. Make certain that the Load prompt is displayed as follows. (If you do not have the Load prompt on any screen, you may have to end a foreground job.)

```
Program name:  
Device address:  
Partition number:
```

Press ENTER

05-00

3. Enter the program name TPROC and press the FIELD+ or the FIELD EXIT key.
4. Enter the address of the diskette drive containing the verification diskette.
5. Press the ENTER key. The verification program is loaded into the system and begins execution.
6. When the test is complete, the following prompt is displayed:

```
Test complete.  
Options are  
  1. Restart  
  2. Exit  
Select option:           Press ENTER           61-79
```

If this prompt does not appear, go to "BRANCH H" on page 55.

7. You may execute the program again by selecting option 1 of the Test complete prompt, or select option 2, to return to the Load prompt.

| BRANCH H

If the second application program microprocessor cannot function at all, the following prompt is displayed on the screen:

```
The TPROC test did not complete.  
If your system has the feature installed,  
call your service representative.  
If not, IPL the Verification diskette to continue other tests. 61-01
```

Call your service representative. If you wish to test other features, you must IPL the verification diskette.

If the second application program microprocessor fails in any other way, the following prompt is displayed:

```
The TPROC test did not complete.  
Call your service representative.  
  
Press ENTER 61-02
```

Call your service representative. Press the ENTER key.

After you press the ENTER key, the following prompt is on your display:

```
Test terminated.  
Options are  
  1. Restart  
  2. Exit  
Select option:          Press ENTER          61-78
```

You may restart the test by selecting option 1, or select option 2 to return to the Load prompt.

END

CHAPTER 9. ERROR LOG AND MAIN STORAGE DUMPING PROCEDURES

This section contains the following four procedures for saving the error log information and dumping main storage:

- Using TSYSLLOG to dump the system error log
- Using TCOMLOG to dump the communications error log
- Using SYSDUMP
- Taking an absolute dump.

HOW TO DUMP THE SYSTEM ERROR LOG (TSYSLLOG)

The system error log contains all hardware-related errors that occur from the time you start the system to the time the system is stopped. The error log is important to service personnel; they need it to service your system.

If a Disk Storage Device feature is installed on your system, and support for automatic disk error logging was selected using SYSCON, the system errors are automatically logged to the disk. See the IBM 5280 SCP Reference Manual for more information.

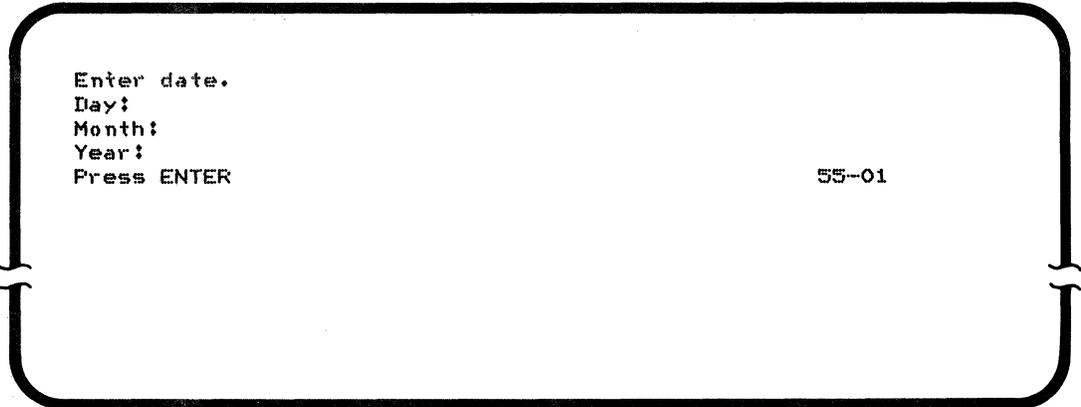
If a disk drive is not installed on your system, or if automatic disk error logging is not supported in the system configuration, the system error log must be dumped every day before the system is stopped. The machine verification diskette contains the program and data set space required to dump the error logs.

Warning: The error log information in main storage is lost whenever the system power is turned off, or an IPL is performed. The system IPL must be used in order for the programs in this section to run correctly. These programs will not run on an IBM 5280 that has been IPLed from the machine verification diskette.

To dump the system error log information, do the following:

1. Insert the machine verification diskette and close the diskette locking lever.
2. Enter the program name TSYSLLOG, and press the FIELD+ or FIELD EXIT key.
3. Enter the address of the diskette drive containing the verification diskette, and press the ENTER key. The program TSYSLLOG is loaded into the system.

4. If the date is not already entered into the system, the Date prompt is displayed:

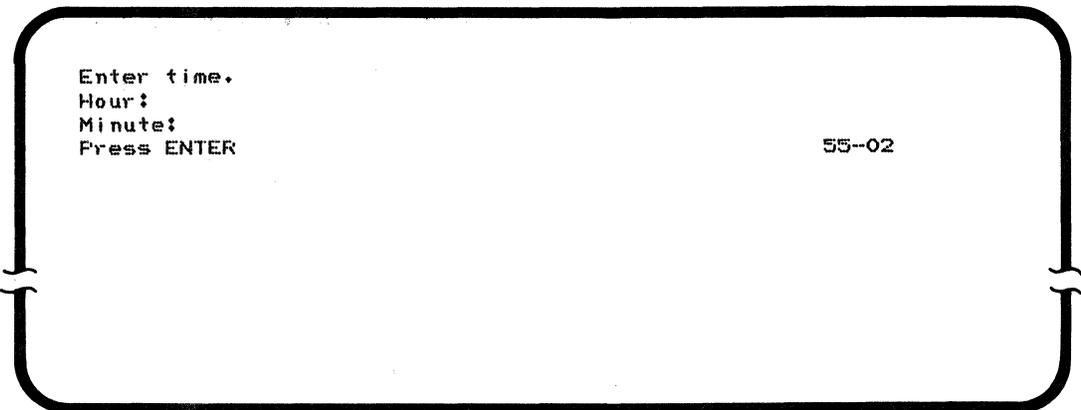


A screenshot of a terminal window showing a date entry prompt. The text is as follows:

```
Enter date.  
Day:  
Month:  
Year:  
Press ENTER
```

The screen number "55-01" is displayed in the bottom right corner. The terminal window is enclosed in a rounded rectangular border with small hooks at the corners.

5. After the date is entered, press the ENTER key. The Time of Day prompt is displayed:



A screenshot of a terminal window showing a time entry prompt. The text is as follows:

```
Enter time.  
Hour:  
Minute:  
Press ENTER
```

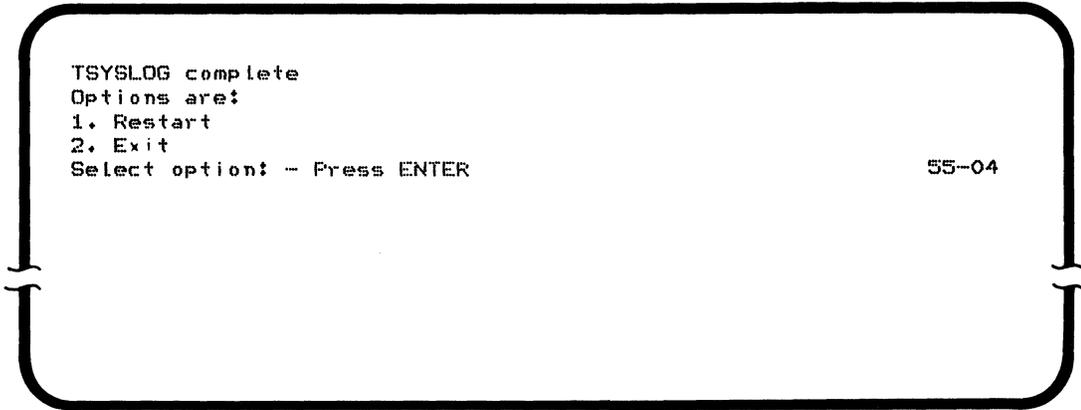
The screen number "55-02" is displayed in the bottom right corner. The terminal window is enclosed in a rounded rectangular border with small hooks at the corners.

6. Enter the time and press the ENTER key.

12. If the program runs successfully, the following prompt is displayed:

```
TSYSLOG complete
Options are:
1. Restart
2. Exit
Select option: - Press ENTER
```

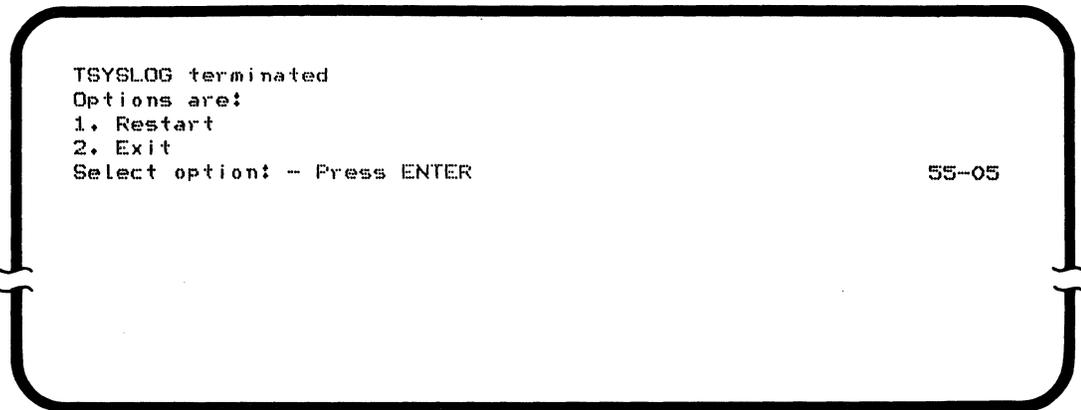
55-04



13. If an error is detected or if the SYSREQ key was pressed before the program finished, the following prompt is displayed:

```
TSYSLOG terminated
Options are:
1. Restart
2. Exit
Select option: - Press ENTER
```

55-05



14. Remove the verification diskette.

| HOW TO DUMP THE COMMUNICATIONS ERROR LOG (TCOMLOG)

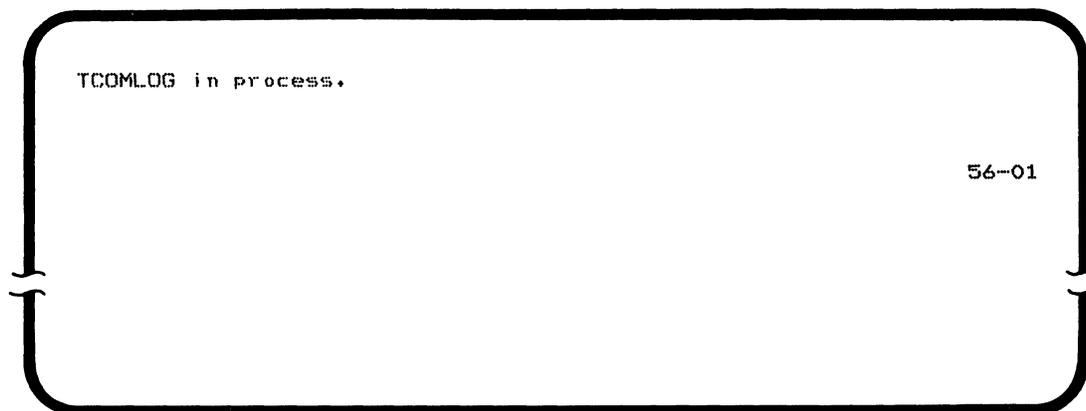
The communications error log contains all communications errors that occur from the time you start communications to the time communications is stopped. The error log information is important to service personnel; they need it to service your system.

Warning: The communications error log is lost when the system power is turned off, an IPL is performed, or if the Communication Access Method (CAM) is cancelled.

If you are instructed by the IBM 5280 Message Manual to dump the communications error log, do the following:

1. Insert the machine verification diskette and close the diskette locking lever.
2. Enter TCOMLOG, and press the FIELD+ or the FIELD EXIT key.
3. Enter the address of the diskette drive containing the verification diskette, and press the ENTER key. The program TCOMLOG is loaded into the system.

When the program is running, the following prompt appears on the screen:



After the error log is written on the diskette, TSYSLLOG is automatically loaded to save the system errors in the communications log area. See "How to Dump the System Error Log (TSYSLLOG)" on page 57 for the prompts and instructions.

HOW TO USE SYSDUMP

The system dump procedure (SYSDUMP) allows you to obtain the following:

- Memory dump
- Partition dump
- Formatted diskette.

The memory dump and partition dump are used to print data from a diskette that was used for an absolute dump. The formatted diskette is used for taking an absolute dump.

Note: The diskette to be formatted by the SYSDUMP utility must not contain data sets. If it does, you must remove them by using the SYSCLEAR utility. The formatted diskette should be prepared before an absolute dump is needed and stored with your other system diskettes.

1. If you do not have a verification diskette in the drive you are going to use, do the following:
 - a. Open the diskette locking lever.
 - b. Insert the verification diskette into the drive. Be sure to push the diskette all the way to the back of the drive.
 - c. Close the diskette locking lever.
2. Make certain that the Load prompt is displayed as follows. (If you do not have the Load prompt on any screen, you may have to end a foreground job.)

```
Program name:  
Device address:  
Partition number:  
  
Press ENTER  
05-00
```

3. Enter the program name SYSDUMP, and press the FIELD+ or FIELD EXIT key.

4. Enter the address of the diskette drive containing the verification diskette.
5. Press the ENTER key. The SYSDUMP program is loaded into the system.
6. The following prompt is displayed:

```
Sysdump utility options are:  
  1. Memory dump  
  2. Partition dump  
  3. Format a diskette.  
Select option:      Press ENTER
```

49--01

7. Select the appropriate option for the function you want to do. Press the ENTER key. Then go to the part of this procedure for the option you selected:

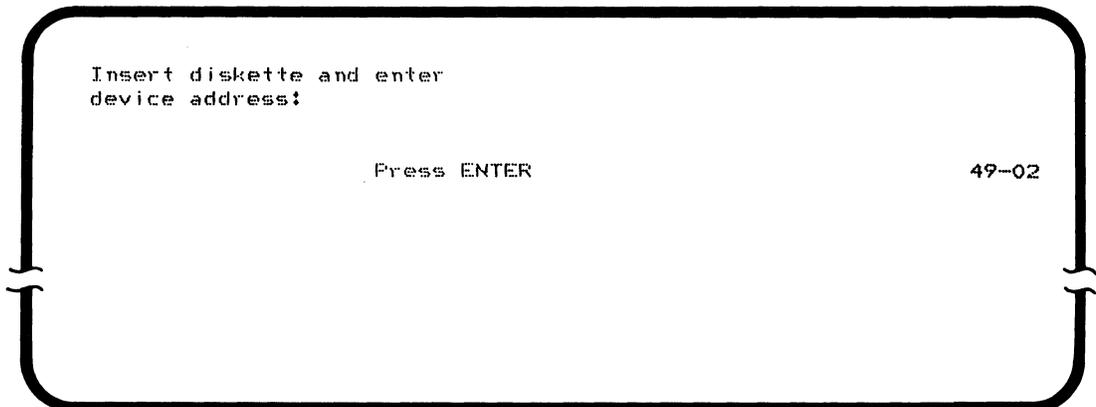
Option 1—go to "Part 1 (Memory Dump)" on page 64.

Option 2—go to "Part 2 (Partition Dump)" on page 66.

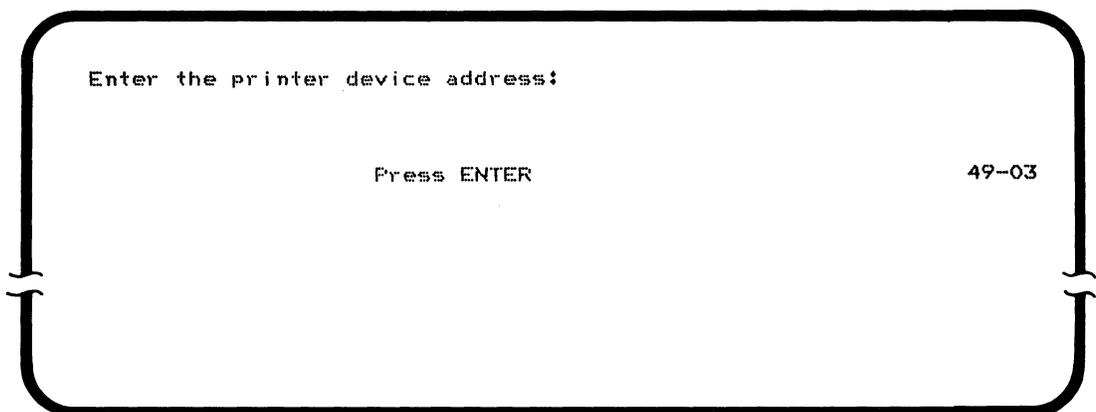
Option 3—go to "Part 3 (Format a Diskette)" on page 68.

Part 1 (Memory Dump)

1. The following prompt is displayed on the screen:



2. Insert the absolute dump diskette into a diskette drive, and enter the drive address.
3. Press the ENTER key. The following prompt is displayed:



4. Enter the device address of the printer, and press the ENTER key.

5. The following prompt is displayed on the screen:

```
Output to the printer will now begin.  
Align paper to top of page.  
  
Press ENTER  
49-05
```

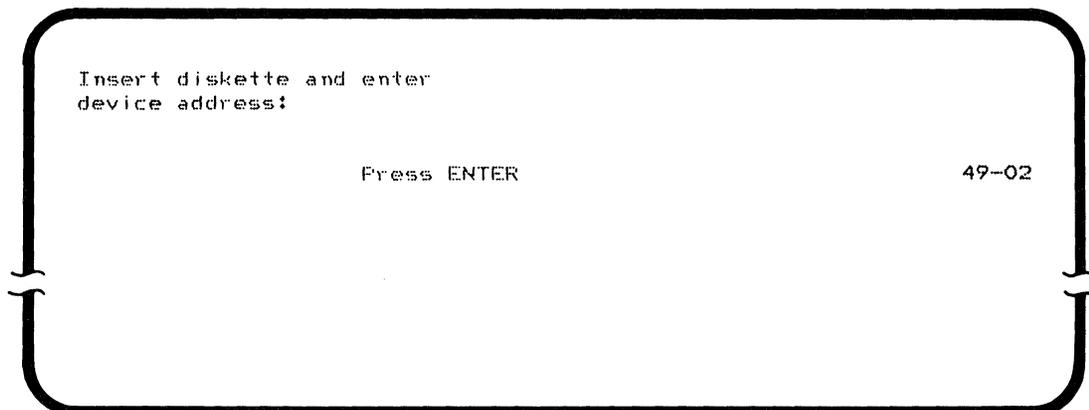
6. The memory dump is printed on the printer you specified. When it has completed, the following prompt is displayed:

```
Utility completed.  
Options are:  
  1. Restart  
  2. Exit  
Select option: Press ENTER  
49-78
```

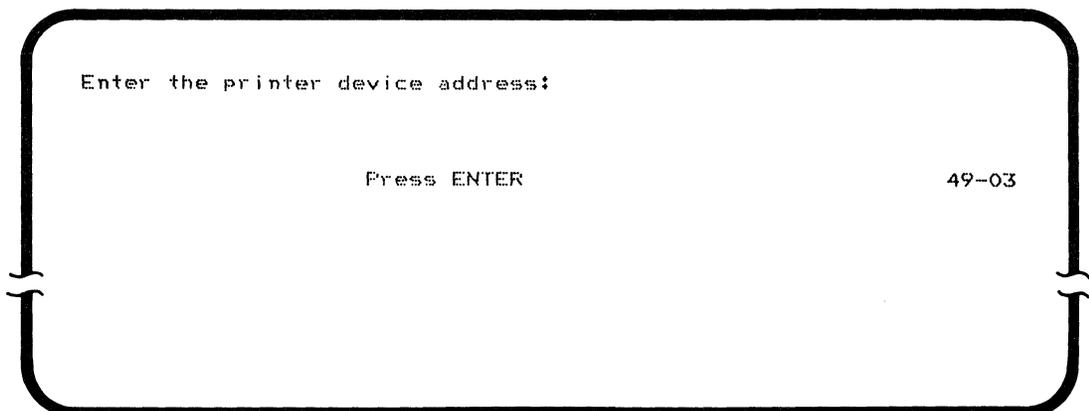
7. You may choose to restart the program by selection option 1, or exit the program by choosing option 2, which returns you to the Load prompt.

Part 2 (Partition Dump)

1. The following prompt is displayed on the screen:

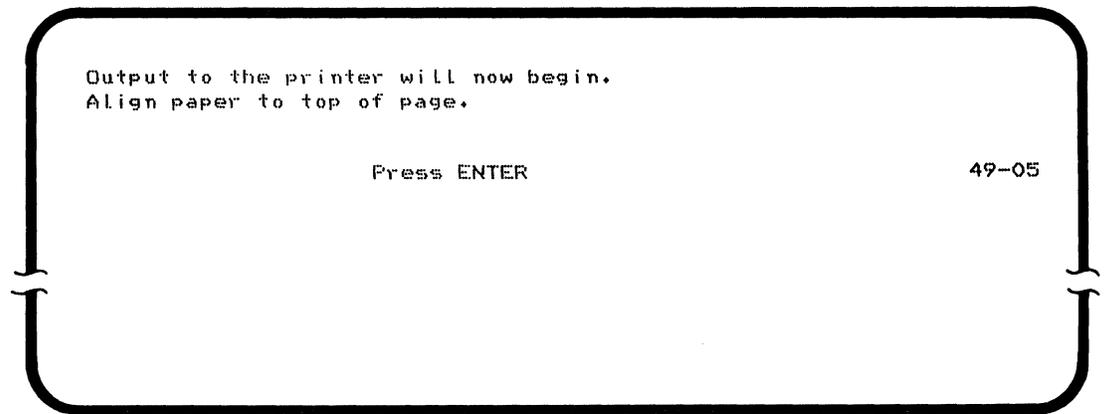


2. Insert the absolute dump diskette into a diskette drive, and enter the drive address.
3. Press the ENTER key. The following prompt is displayed:

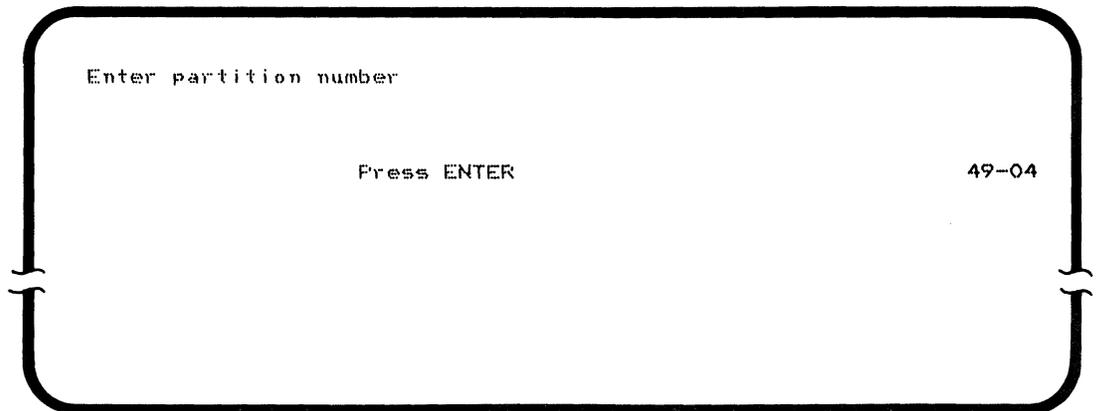


4. Enter the device address of the printer, and press the ENTER key.

5. The following prompt is displayed:



6. Align the paper, and press the ENTER key. The following prompt is displayed on the screen:



7. Enter the number of the partition you want printed.

8. Press the ENTER key. The partition dump is printed on the printer. Save this printout for the service representative. When the program completes, the following prompt is displayed:

```
Utility completed.  
Options are:  
  1. Restart  
  2. Exit  
Select option:      Press ENTER                                49-78
```

9. You may choose to restart the program (using another partition number if you want), or you may exit the program.

Part 3 (Format a Diskette)

1. The following prompt is on the screen:

```
Insert diskette and enter  
device address:  
  
Press ENTER                                49-02
```

2. Insert a diskette that is initialized to a 128-byte record format, and does not contain data sets. Enter the address of the diskette drive being used.

3. Press the ENTER key. While the program is running, the following prompt appears on the screen:

```
Sysdump in process.
```

49-06

4. This program sets up a data set (DUMP5280) on the diskette that you may need later for taking an absolute dump. When the program completes, the following prompt is displayed:

```
Utility completed.  
Options are:  
  1. Restart  
  2. Exit  
Select option:      Press ENTER
```

49-78

5. You may choose either to restart or exit the test.
6. Remove the diskette from the diskette drive, label it as an absolute dump diskette, and store it with your other system diskettes.

HOW TO TAKE AN ABSOLUTE DUMP

Read through this entire section before starting, so that you are prepared to perform the steps quickly when necessary.

Warning: If a communications job is running when an absolute dump is taken, it may be abnormally terminated.

There are two procedures for taking an absolute dump. The selection of which procedure to use depends on the availability of an active diskette drive (the red indicator light is on).

To take an absolute dump, when there is an active diskette drive, do the following:

1. Obtain the absolute dump diskette that was created using SYSDUMP.
2. Find an active diskette drive (red indicator light on).

Note: The following step must be performed within 5 seconds.

3. Open the diskette locking lever and remove the diskette from the active diskette drive; the system begins to buzz. Insert the absolute dump diskette into the diskette drive, and close the diskette locking lever.
4. The diskette drive starts writing on the diskette; you hear the drive click. Do not remove the diskette until the drive has finished writing.
5. When you are certain that the clicking has stopped, open the diskette locking lever and remove the diskette.
6. Save the diskette and call your service representative.

To take an absolute dump, when there is not an active diskette drive, do the following:

1. Obtain the absolute dump diskette that was created using SYSDUMP.
2. Insert the absolute dump diskette into an available diskette drive, and close the diskette locking lever.

Note: The keyboard attached to partition 0 must be used in the following procedure. In the following steps when you are told to press the Shift key, press the NUM key (numeric shift) if you are using a data entry/proof keyboard or press the left  key (upper shift) if you are using a typewriter keyboard. Also, when using a typewriter keyboard, use the numeric pad to enter numeric data.

3. Press the CMD key and then press the L key; the keyboard buzzes.
4. If you are using a non-proof keyboard and a single display, go to step 5. If you are using a proof keyboard or a dual display, press and hold the Shift key, and press the C key; the keyboard buzzes. Release the Shift key, and enter one of the following:
 - If you are using a non-proof keyboard and a dual display, enter 01.
 - If you are using a proof keyboard and a single display, enter 10.
 - If you are using a proof keyboard and a dual display, enter 11.
5. A line of data is displayed on the bottom of the screen.
6. Press and hold the Shift key, and press the 4 key. Release the Shift key, and enter 00DC.
7. Press and hold the Shift key, and press the 7 key. Release the Shift key, and enter the first 2 digits of the address of the diskette drive containing the absolute dump diskette. For example, if the dump diskette is in drive 4000, enter 40, if the dump diskette is in drive 5C00, enter 5C.
8. Press and hold the Shift key, and press the E key. Release the Shift key, and press the RESET key. The diskette drive starts writing on the dump diskette; you hear the drive click. Do not remove the diskette until the drive has finished writing.

Note: If the diskette drive does not start writing on the dump diskette (the drive is clicking), quickly open and close the diskette locking lever of the drive containing the dump diskette. You have 5 seconds to close the locking lever after it has been opened. If the diskette drive still does not begin writing, go to step 2 and repeat the above procedure.
9. When you are certain that the clicking has stopped, open the diskette locking lever, and remove the diskette.
10. Save the diskette and call your service representative.

CHAPTER 10. DATA RECOVERY PROCEDURE (SYSRCVR)

Use the data recovery procedure to:

- Read and display a data set (or volume) label from a defective diskette or disk.
- Modify the label if necessary.
- Copy a defective diskette data set to another diskette or to a disk.
- Copy a defective disk data set to another disk or to a diskette.
- Display the records of the data set being copied.
- Modify the records if necessary.
- Modify a defective disk sector.

WHEN TO USE THE DATA RECOVERY PROCEDURE

The data recovery program provides a means of recovering the maximum amount of data from a defective diskette or disk. The diskette option of this procedure can only be used to recover data from a diskette created on an IBM 5280 System.

If the volume label is defective, this procedure cannot be used. If a data set label is defective, you can rewrite it to another label space on the same diskette or disk. If records of the data set are defective, you can copy the data set to either a diskette or disk, and enter the defective records. You can also rewrite defective disk records on the existing disk data set.

Warning: Improper use of this program can destroy data. This program should be used only by someone who is familiar with the format and contents of the labels on the index cylinder.

Do not use this procedure for routine copying; instead use the copy utility (SYSCOPY). Do not use this procedure for routine label maintenance; instead use the label maintenance utility (SYSLABEL).

LOAD THE DATA RECOVERY PROCEDURE

Make sure you have a printed listing of the labels on the diskette or disk to be modified, before you begin modifying the labels. You can use the list utility (SYSLIST) to print the existing labels, if the labels are not defective.

The machine verification diskette contains the data recovery program (SYSRCVR). Two drives (disk or diskette) are required, if the copy option is used to recover the data from a defective data set. Only one disk drive is required if the option to fix in place is used to modify a disk data set.

Note: The programs in this section will not run on an IBM 5280 that has been IPLed from the machine verification diskette. The system IPL must be used in order for these programs to run correctly.

1. Insert the machine verification diskette and close the diskette locking lever.
2. Enter the program name SYSRCVR, and press the FIELD+ or FIELD EXIT key.
3. Enter the address of the diskette drive containing the verification diskette and press the ENTER key. The program SYSRCVR is loaded into the system.

SELECT DEVICE OPTION

1. The following prompt is displayed:

```
Which type of device is to be used for input?  
Options are  
  1. Diskette  
  2. Disk  
Select option:      Press ENTER                      38-20
```

2. Select option 1, if you want to recover data from a diskette.
3. Select option 2, if you want to recover data from a disk.

4. Press the ENTER key.
5. If you selected option 1, Diskette, go to "Diskette Data Recovery." If you selected option 2, Disk, go to "Disk Data Recovery" on page 88.

DISKETTE DATA RECOVERY

1. If you selected option 1, Diskette, on the Select Device prompt (38-20), the following prompt is displayed:

```
Diskette recovery program
Insert diskette to be copied from and enter
Data set name:                (optional)
Device address:                Label number to begin search:
                               Press ENTER                               38-04
```

2. Insert the defective diskette into a diskette drive and close the diskette locking lever.
3. Enter the data set name of the data set label you want displayed. If you do not enter a data set name, the first diskette data set label is displayed.

Note: You should omit the data set name if:

- The data set label is defective.
 - Any defective data set labels precede the label you want to display.
 - You want to display the volume label.
4. Enter the address of the diskette drive containing the defective diskette.
 5. Enter the label number where you wish the search to begin. If you entered a data set name, the search for the data set begins at this label. If a data set name is not entered, the label with the specified label number is displayed.

6. Press the ENTER key. If the diskette is volume-protected, the following prompt is displayed:

```
Diskette is volume protected.
Device:          Data set:
Enter owner identifier to access volume:

                          Press ENTER                          05-01
```

7. Enter the owner identifier and press the ENTER key.

Display Data Set Label

1. The label for the specified (or first) data set is read from the defective diskette and the following prompt is displayed:

```
Do you want to copy this dataset?      (1=Yes, 2=No):
LABEL -                                2-
HDR1 XXXXXXXX  XXXXXXXX XXXXX  I  XXX  XXX      DXXXXX
                          IBM5280  *
                          Press ENTER                          38-05
```

Note: If you press the HOME key when the first data set is shown on the screen, the volume label is displayed. If you press the HOME key when any other data set label is shown, the preceding data set label is displayed.

2. Lines 4 and 5 of this display contain the label exactly as it was read from the diskette. You can modify or delete the label that is displayed. For more information, see "Modifying the Data Set Label" on page 77, "Deleting Labels" on page 79, or "Modifying the Volume Label" on page 79.

3. If an error occurs when the label is read from the diskette, the label prompt is displayed with an appropriate error code on line 3. See the IBM 5280 Message Manual for further information.

You can try to reconstruct the correct label data from the label information being displayed, or from other labels on the diskette. For more information, see "Modifying the Data Set Label."

4. If you do not want to copy the data set, accept the default of 2 by pressing the ENTER key. The next label is read from the diskette and displayed in lines 4 and 5 of the Label prompt (38-05). You may repeat this section for any data set label.
5. If you do want to copy the data set, enter 1. The first line of the Label prompt is changed; see "Select Copy Options" on page 80.

Modifying the Data Set Label

1. The following prompt is on your display:

```
Do you want to copy this dataset?      (1=Yes, 2=No):
LABEL -                                2-
HDR1 XXXXXXXX  XXXRXXXXX XXXXX      I  XXX  XXX      DXXXXX
                                IBM5280      %
                                Press ENTER                                38-05
```

2. If an error code is displayed on line 3, this diskette label space is defective. Try entering the label data into deleted or unused label space. To find this space, press the ENTER key to advance through the labels or the HOME key to return to previous labels. The system can then attempt to copy the data set using the new data set label.
3. You can modify any label field. See the IBM 5280 Functions Reference Manual or the IBM 5280 Data Areas Handbook, for complete descriptions of the label fields.

4. Press the  key (Field Advance) or  key (Field Backspace) to move the cursor to the fields you want to modify.

Note: When the cursor enters a label field, the field is identified on line 1 of the label prompt.

5. Modify the label as necessary. Make a note of the changes made.
6. Press the ENTER key.
7. The system attempts to write the modified label to the original diskette, replacing the original label. If the label is successfully written to the original diskette, the system opens the corresponding data set to test the validity of the modified label. If the data set can be opened, the label is assumed to be valid and the modified label is redisplayed.

If an error occurs (an error code is displayed on the status line), the original (unmodified) label is restored to the original diskette and redisplayed. If the copy option was selected for the data set, the label is validated after the data is restored.

8. If a defective header label exists anywhere on the diskette, the extent checking cannot be performed during label validation. The following prompt is displayed:

```
Defective label(s) found on diskette.  
Extent check/Duplicate name check cannot be performed.  
ERROR - XXXX  
  
Press ENTER 38-08
```

9. Press the ENTER key. The modified header label is redisplayed.

Deleting Labels

1. When the label is displayed on the screen, press the CMD key, then the Delete Record key.
2. The system replaces the first letter in the label with a D. The deleted label can be redisplayed later, unless the system uses this deleted space for a new label.

Reinstating Deleted Labels

Note: If you want a deleted data set to be copied, you must reinstate the deleted label before you request the copy.

1. When the label is displayed on the screen, move the cursor to the first character (a D) in the label.
2. Press the H key.
3. Change any other fields that are in error, then press the ENTER key.

Modifying the Volume Label

1. The following prompt is on your display:

```
LABEL -  
VOL1VOL1D          IBM5280          OWNERID          01 W  
-----  
38-05  
  
Press ENTER
```

Note: If the volume label is defective the data recovery program cannot be used.

2. Press the  key (Field Advance) or  key (Field Backspace) to move the cursor to the fields you want to modify.
3. Modify the volume label as necessary. Make a note of the changes made.

4. Press the ENTER key. The system writes the modified label to the original diskette.

Select Copy Options

1. When you request that a data set be copied, the following prompt is displayed:

```
Do you want to delete unused space?      (1=Yes, 2=No):  
LABEL -                                  1 _  
HDR1 XXXXXXXX  XXXRXXXXXX XXXXX      I  XXX XXX      DXXXXX  
      IBM5280                               *  
      Press ENTER                          38-05
```

2. If you enter 1, the deleted records in the data set are not copied; the unused space in the copied data set is released.
3. If you enter 2, all deleted records in the original data set are copied and marked as deleted records in the copied data set. The copied data set is the same size as the original data set.
4. After you have entered a number, the Label prompt is changed as follows:

```
Do you want to display records during copy?  (1=Yes, 2=No):  
LABEL -                                  1 _  
HDR1 XXXXXXXX  XXXXXXXXXX XXXXX      I  XXXX      DXXXXX  
      IBM5280                               *  
      Press ENTER                          38-05
```

5. If you enter 1 and press the ENTER key, the first record of the data set is displayed when the copy process begins (38-06).

6. If you enter 2 and press the ENTER key, a record is displayed only if an error occurs during the copy process (38-06).
7. If this is the first data set to be copied, the following prompt is displayed:

```
Diskette recovery program
Insert diskette to be copied to and enter
Device address:                               38-01
                                         Press ENTER
```

8. If you are copying the data set to another diskette, insert the output diskette into a diskette drive and close the diskette locking lever.
9. Enter the address of the output device.
10. Press the ENTER key.
11. If the diskette or disk is volume-protected, the volume-protect prompt (05-01) is displayed. Enter the owner identifier and press the ENTER key.
12. If the output device does not contain data sets, the copy process begins; see "Copy the Data Set" on page 83.

13. If data sets are found on the output device, the following prompt is displayed:

```
Output diskette contains datasets
XXXXXXXX      XXXXXXXX      XXXXXXXX      XXXXXXXX
XXXXXXXX      XXXXXXXX      XXXXXXXX      XXXXXXXX
XXXXXXXX      XXXXXXXX      XXXXXXXX      XXXXXXXX
                Press ENTER                                38-02
```

14. Press the ENTER key.
15. If there are more than 12 data sets on the output device, the other data set names are then displayed.
16. After all the data set names have been displayed, the following prompt is displayed:

```
Output diskette contains datasets
Options are
  1. Restart          3. Delete all existing datasets
  2. Exit            4. Add dataset to this diskette
Select option:      Press ENTER                                38-03
```

17. Select an option:

- Select 1 if you want the procedure to be restarted. The Diskette Recovery prompt (38-04) is displayed.
- Select 2 if you want to exit from the procedure.
- Select 3 if you want to delete all data set labels on the output device, then replace them with the data set labels being copied from the defective diskette.
- Select 4 if you want to add the data set being copied to the output device.

If you select 3 or 4, the same output device is used for copying successive data sets; this prompt (38-03) is not repeated.

18. Press the ENTER key.

Note: An error occurs if the data set label to be copied already exists on the output device. Press the RESET key, the data set from the defective diskette can now be copied. Or press the CMD key, and then the End of Job key to terminate the procedure; the data sets are not deleted or copied.

Copy the Data Set

The system opens the data set to be copied, then allocates a data set on the output device. If an error occurs during the open or allocation, an error code is displayed on the status line. Before you press the RESET key, see the IBM 5280 Message Manual for the appropriate recovery procedures.

Note: If you attempt to copy a basic or H exchange data set to a diskette that does not allow this exchange type, or to a disk, an error occurs. Press the RESET key. The data set is converted to an I exchange type and copied to the output device.

After a successful open and allocation, the input data set is copied to the output device. If you selected to display a data set record (option 1 in the last copy option for prompt 38-05), or if an error occurs when a record is read from the defective diskette, the record is displayed; see "Display Data Set Record" on page 84.

If an error occurs when the record is written to the output device, an error code is displayed on the status line. After you reset the error, press the ENTER key to attempt to continue the copy, or use the CMD and End of Job key sequence to terminate the program. See "Procedure Termination" on page 87, for more information.

After the data set is copied, the following prompt is displayed:

```

Data recovery completed.

Press ENTER                                38-09

```

If the data set is copied successfully, another data set label can be displayed. If you entered a data set name for the Diskette Recovery prompt, that prompt (38-04) is redisplayed. Otherwise, the label for the next data set on the input diskette is displayed (38-05).

Display Data Set Record

1. If you selected to display a record (prompt 38-05, option 1), or if an error occurred when a record was read, the following prompt is displayed:

```

RECORD - XXXXXX   STOP AT -           ERROR - XXXX
XXXXXXXXXXXXX . . .

Press ENTER                                38-06

```

The record number in line 1 is a sequential count of the records that were copied, including deleted records.

2. The cursor is in the first position of the STOP AT field.

Enter the record number of the record you want displayed next. If you do not enter a number, the next record is displayed. If you want records displayed only when an error occurs, enter any number greater than the total number of records in the data set.

3. If the record to be displayed next has already been copied, it is reread from the output device and displayed with any previous modifications.
4. If the specified record has not been copied, the program continues to copy records until that record is encountered, and then displays the specified record. If an error occurs before the specified record is reached, the record containing the error is displayed.

Note: The word ERROR and the error code are displayed only if an error occurs while the record is being read.

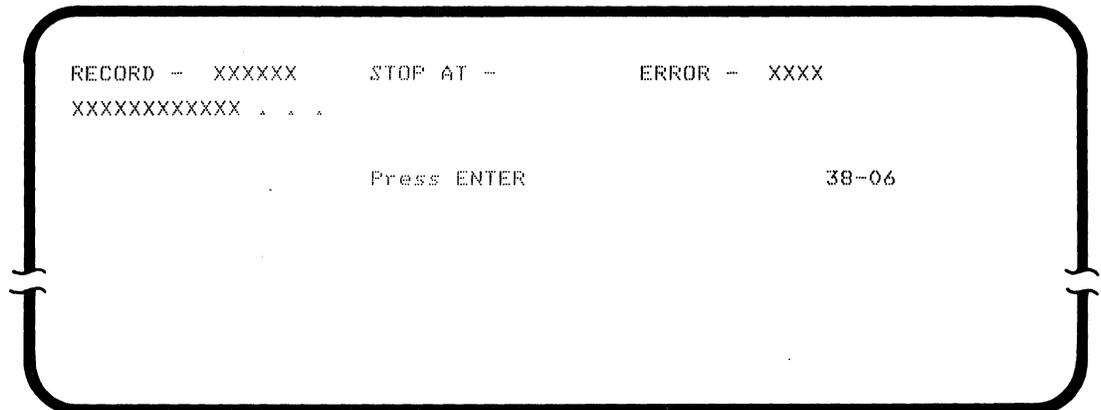
5. The record beginning in line 3 may contain incorrect characters. Any record position being displayed can be modified before you press the ENTER key. See "Modifying a Data Record" on page 86, for more information.

If the record is too large to fit on the screen, the record is truncated. The remaining data is copied but not displayed. The maximum number of record bytes that can be displayed on the different size screens are:

Screen Size (Characters)	Bytes Displayed
480	256
960	736
1920	1696

Modifying a Data Record

1. The Record prompt is on your display:



2. Press the  key (Field Advance) to place the cursor at the first position of the displayed record.
 3. Use the Cursor movement keys to position the cursor at the characters you want to modify.
 4. If you place the cursor under an undisplayable character (represented by a solid rectangular block on the screen), the hexadecimal value of that record byte is displayed on the status line.
 5. Modify the characters of the displayed record where necessary.
- Note:** Press the HOME key to move the cursor to the first position of the STOP AT field. If the cursor is already in the first position of the STOP AT field, press the HOME key to copy the record and display the previous record.
6. Press the ENTER key. The modified record is copied to the output device. The input data set is not changed.

Deleting Records

You can delete a record by using the CMD and Delete Record key sequence, when the record is displayed. The record is copied to the output device as a deleted record.

Procedure Termination

1. When the data recovery procedure is terminated, the following prompt is displayed:

```
Program terminated.  
Options are  
  1. Restart  
  2. Exit  
Select option:      Press ENTER      38-07
```

2. If you select option 1 and press the ENTER key, the Diskette Recovery prompt (38-04) is displayed.
3. If you select option 2 and press the ENTER key, the Load prompt is displayed if in a foreground partition. Otherwise, the program exits and frees the partition.

The data recovery procedure can be terminated any time during the procedure by the CMD and End of Job key sequence.

DISK DATA RECOVERY

1. If you selected option 2, Disk, on the Select Device prompt (38-20), the following prompt is displayed:

```
Disk data recovery program
Give address of disk to be copied from and enter
Data set name:                (optional)
Device address:                Label number to begin search:
                               Press ENTER                               38-21
```

2. Enter the data set name of the data set label you want displayed. If you do not enter a data set name, the first disk data set label is displayed.

Note: You should omit the data set name if:

- The data set label is defective.
 - Any defective data set labels precede the label you want to display.
 - You want to display the volume label.
3. Enter the address of the defective disk.
 4. Enter the label number where you wish the search to begin. If you entered a data set name, the search for the data set begins at this label. If a data set name is not entered, the label with the specified label number is displayed.

5. Press the ENTER key. If the disk is volume-protected, the following prompt is displayed:

```
Disk is volume protected.  
Device  
Enter owner identifier to access volume:  
  
Press ENTER                                05-01
```

6. Enter the owner identifier, and press the ENTER key.

Display Data Set Label

1. The label for the specified (or first) data set is read from the defective disk, and the following prompt is displayed:

```
Do you want to modify this dataset? (1=Yes, 2=No):  
LABEL ---  
  
HDR1 XXXXXXXX      XXXXXRXXXXX XXXXX   I   XXXX      DXXXXX  
                IBM5280                %  
  
Press ENTER                                38-22
```

Note: If you press the HOME key when the first data set label is shown on screen, the volume label is displayed. If you press the HOME key when any other data set label is shown, the preceding data set label is displayed.

2. Lines 4 and 5 of this display contain the label exactly as it was read from the disk. You can modify or delete the label that is displayed. For more information, see "Modifying the Data Set Label" on page 90, "Deleting Labels" on page 92, or "Modifying the Volume Label" on page 92.

3. If an error occurs when the label is read from the disk, the label prompt is displayed with an appropriate error code on line 3. See the IBM 5280 Message Manual for further information.

You can try to reconstruct the correct label data from the label information being displayed, or from other labels on the disk. See "Modifying the Data Set Label," for more information.

4. If you do not want to modify or copy the data set, accept the default of 2 by pressing the ENTER key. The next label is read from the disk and displayed in lines 4 and 5 of the Label prompt (38-22). You may repeat this section for any data set label.
5. If you do want to modify or copy the data set, enter 1. The Modify Data Set prompt is displayed; see "Select Modify Options" on page 93.

Modifying the Data Set Label

1. The following prompt is on your display:

```
Do you want to modify this dataset? (1=Yes, 2=No):
LABEL --
HDR1 XXXXXXXX      XXXXXRXXXXX XXXXX      I   XXXX      DXXXXX
                    IBM5280                *
                    Press ENTER                38-22
```

2. If you have an error code on line 3 of your display, this disk label space is defective. Try entering the label data into deleted or unused label space. To find this space, press the ENTER key to advance through the labels or the HOME key to return to previous labels. The system can then attempt to copy the data set using the new data set label.
3. You can modify any label field. See the IBM 5280 Functions Reference Manual or the IBM 5280 Data Areas Handbook, for complete descriptions of the label fields.

4. Press the  key (Field Advance) or  key (Field Backspace) to move the cursor to the fields you want to modify.

Note: When the cursor enters a label field, the field is identified on line 1 of the label prompt.

5. Modify the label as necessary. Make a note of the changes made.
6. Press the ENTER key.
7. The system attempts to write the modified label to the original disk, replacing the original label. If the label is successfully written to the original disk, the system opens the corresponding data set to test the validity of the modified label. If the data set can be opened, the label is assumed to be valid and the modified label is redisplayed.

If an error occurs (an error code is displayed on the status line), the original (unmodified) label is restored to the original disk and redisplayed. If the copy option was selected for the data set, the label is validated after the data is restored.

8. If a defective header label exists anywhere on the disk, the extent checking cannot be performed during label validation. The following prompt is displayed:

```
Defective label(s) found on disk.  
Extent check/Duplicate name check cannot be performed.  
ERROR - XXXX
```

Press ENTER

38-33

9. Press the ENTER key. The modified header label is redisplayed.

Deleting Labels

1. When the label is displayed on the screen, press the CMD key then the Delete Record key.
2. The system replaces the first letter in the label with a D. The deleted label can be redisplayed later, unless the system uses this deleted space for a new label.

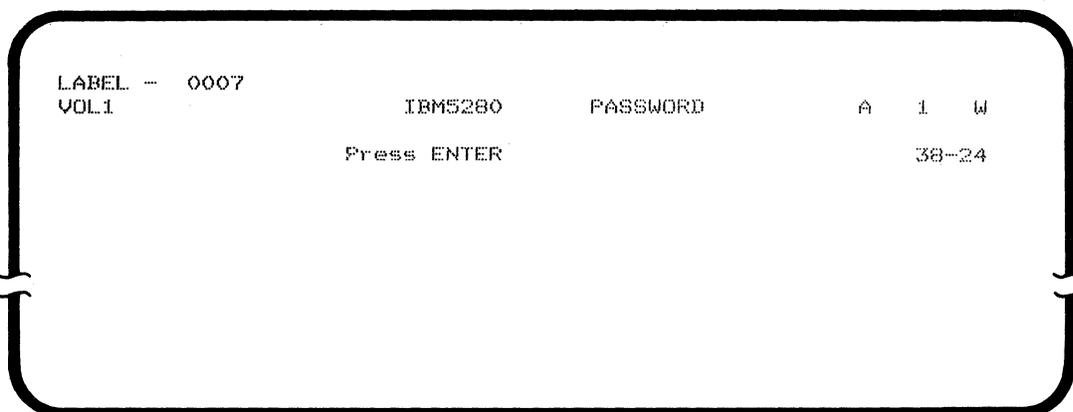
Reinstating Deleted Labels

Note: If you want a deleted data set to be copied, you must reinstate the deleted label before you request the copy.

1. When the label is displayed on the screen, move the cursor to the first character (a D) in the label.
2. Press the H key.
3. Change any other fields that are in error, then press the ENTER key.

Modifying the Volume Label

1. The following prompt is on your display:



Note: If the volume label is defective the data recovery program cannot be used.

2. Press the  key (Field Advance) or  key (Field Backspace) to move the cursor to the fields you want to modify.
3. Modify the volume label as necessary. Make a note of the changes made.

4. Press the ENTER key. The system writes the modified label to the original disk.

Select Modify Options

1. When you request that a data set be modified, the following prompt is displayed:

```
How do you want to modify data set?  
Options are  
  1. Fix in place  
  2. Copy  
Select option:      Press ENTER      38-23
```

2. If you want to modify a data set by fixing it in place, enter 1 and press the ENTER key. The system attempts to read the defective data set, correct any errors it has found, and write the data back to the same data set on the disk. If the area on disk (where the data set is located) is defective, the system writes the defective sector on an alternate track.

Note: If a disk adapter error is detected, the data set is not modified and an error code is displayed on the status line. Also, the system will not assign an alternate track and an error code will be displayed, if one of the following occurs:

- An available data set label is not on the disk.
- At least one sector (256 bytes) of available space is not on the disk.
- A data set named SYSRCVRH already exists on the disk.

Record the error code; see the IBM 5280 Message Manual for further information. Press the RESET key, the Program Termination prompt (38-07) is displayed.

3. If you want to copy the data set to another disk or to a diskette, enter 2 and press the ENTER key.

Select Copy Options

1. If you selected option 2, Copy, on the Modify Data Set prompt, (38-23), the following prompt is displayed:

```
Do you want to display all records?  
Options are  
1. Yes  
2. No  
Select option:      Press ENTER                               38-25
```

2. If you enter 1 and press the ENTER key, all records, including deleted records, are displayed before they are copied.
3. If you enter 2 and press the ENTER key, a record is displayed only if an error occurs during the copy process.
4. If this is the first data set to be copied, the following prompt is displayed:

```
Disk data recovery program  
Insert diskette to be copied to and enter  
Device address:      Press ENTER                               38-28
```

5. If you are copying the data set to a diskette, insert the output diskette into a diskette drive and close the diskette locking lever.
6. Enter the address of the output device.
7. Press the ENTER key.

8. If the diskette or disk is volume-protected, the volume-protect prompt (05-01) is displayed. Enter the owner identifier and press the ENTER key.
9. If the output device does not contain data sets, the copy process begins; see "Copy the Data Set" on page 96.
10. If data sets are found on the output device, the following prompt is displayed:

```

Output diskette/disk contains datasets
XXXXXXXX      XXXXXXXX      XXXXXXXX      XXXXXXXX
XXXXXXXX      XXXXXXXX      XXXXXXXX      XXXXXXXX
XXXXXXXX      XXXXXXXX      XXXXXXXX      XXXXXXXX
                Press ENTER                                38-29

```

11. Press the ENTER key.
12. If there are more than 12 data sets on the output device, the other data set names are then displayed.
13. After all data set names have been displayed, the following prompt is displayed:

```

Output diskette/disk contains datasets
Options are
  1. Restart          3. Delete all existing datasets
  2. Exit            4. Add dataset to this diskette/disk
Select option:      Press ENTER                                38-30

```

14. Select an option:

- Select 1 if you want the procedure to be restarted. The Disk Recovery prompt (38-21) is displayed.
- Select 2 if you want to exit from the procedure.
- Select 3 if you want to delete all data set labels on the output device, then replace them with the data set labels being copied from the defective disk.
- Select 4 if you want to add the data set being copied to the output device.

If you select 3 or 4, the same output device is used for copying successive data sets; this prompt (38-30) is not repeated.

15. Press the ENTER key.

Note: An error occurs if the data set label to be copied already exists on the output device. Press the RESET key, the data set from the defective disk can now be copied. Or press the CMD key and End of Job key to terminate the procedure; the data sets are not deleted or copied.

Copy the Data Set

The system opens the data set to be copied, then allocates a data set on the output device. If an error occurs during the open or allocation, an error code is displayed on the status line. Before you press the RESET key, see the IBM 5280 Message Manual for the appropriate recovery procedures.

Note: All deleted records in the original data set are copied and marked as deleted records in the copied data set. The copied data set is the same size as the original data set.

After a successful open or allocation, the input data set is copied to the output device. If you selected to display a data set record (prompt 38-25, option 1), or if an error occurred when a record was read from the defective disk, the record is displayed. For more information, see "Display Data Set Record" on page 99.

If an error occurs when the record is written to the output device, an error code is displayed on the status line. After you reset the error, you can press the ENTER key to attempt to continue the copy, or use the CMD, End of Job key sequence to terminate the program. See "Procedure Termination" on page 103, for more information.

If the output device requires additional space to copy a data set, the Multivolume Support prompt (38-31) is displayed; see "Select Multivolume Output" on page 97.

After the data set is copied, the following prompt is displayed:

```
Data recovery completed.  
Press ENTER                                     38-09
```

If the data set is copied successfully, another data set label can be displayed. If you entered a data set name for the Disk Recovery prompt, that prompt (38-21) is redisplayed. Otherwise, the label for the next data set on the input disk is displayed.

Select Multivolume Output

1. If you are copying a data set and the output data set requires an additional output diskette or disk, the following prompt is displayed:

```
End of volume, copy OUTPUT data set                Volume:  
Do NOT remove diskette until next screen is displayed.  
Do you want multivolume support?  
  1. Yes      2. No  
Select option: Press ENTER                          38-31
```

Line one of the prompt displays the name of the data set being copied and the number of the volume to which the data set was being copied.

Note: If you are copying to a diskette, do not remove the diskette until the next prompt is displayed.

2. If you want to use an additional output diskette or disk, enter 1 and press the ENTER key. The data set is continued on the next diskette or disk and the Next Volume Address prompt (38-32) is displayed.
3. If you do not want to use an additional output diskette or disk, enter 2 and press the ENTER key. The portion of the data set already copied is deleted and the Program Termination prompt (38-07) is displayed. Data sets that are completely copied before the program is terminated are not deleted on the output device.

Next Volume Device Address

1. If multivolume support was selected, the following prompt is displayed:

Insert diskette for next volume in device

Press ENTER

38-32

Note: Each additional output diskette or disk must have the same sector size and exchange type support as the first output diskette or disk.

2. If the previous output device was a diskette, remove the full output diskette from the diskette drive.
3. If the next volume is a diskette, ensure that the displayed device address is correct. If it is not correct, enter the correct address of the diskette drive that you want to use. Insert the next output diskette and close the diskette locking lever.
4. If the next volume is a disk, ensure that the displayed device address is correct. If it is not correct, enter the correct address of the disk that you want to copy to.
5. Press the ENTER key.

6. If the next output diskette is volume-protected with a different owner identifier than the previous output diskette, the Volume-protect prompt (05-01) is displayed. Enter the owner identifier and press the ENTER key.
7. If additional output volumes are required, the Multivolume prompts (38-31 and 38-32) are displayed as needed to complete the copy.

Note: You can not access a previous volume of a multivolume data set by pressing the HOME key.

Display Data Set Record

1. If you selected to display a record (prompt 38-25, option 1), or if an error occurred when a record was read, the following prompt is displayed:

```

  1 2 3          4          5          6 7
  3 000100 SECTOR - 00258 STOP AT - ERROR - 4040 SAMPLE
    000100 C1C2C3C4 C5C6C7C8 C9D1D2D3 D4D5D6D7 |ABCDEFGHIJKLMNPOI
    000110 D8D9E2E3 E4E5E6E7 E8E9F0F1 F2F3F4F5 |QRSTUVWXYZ012345I
    000120 F6F7F8F9 C1C2C3C4 C5C6C7C8 C9D1D2D3 |6789ABCDEFGHIJKLMN
    000130 D4D5D6D7 D8D9E2E3 E4E5E6E7 E8E9F0F1 |NOPQRSTUVWXYZ0123
    000140 F2F3F4F5 F6F7F8F9 C1C2C3C4 C5C6C7C8 |456789ABCDEFGHIJ
    000150 C9D1D2D3 D4D5D6D7 D8D9E2E3 E4E5E6E7 |KLMNOPQRSTUVWXYZ
    000160 E8E9F0F1 F2F3F4F5 F6F7F8F9 C1C2C3C4 |YZ0123456789ABCD
    000170 C5C6C7C8 C9D1D2D3 D4D5D6D7 D8D9E2E3 |EFGHIJKLMNOPQRST
    000180 E4E5E6E7 E8E9F0F1 F2F3F4F5 F6F7F8F9 |UVWXYZ0123456789
    000190 C1C2C3C4 C5C6C7C8 C9D1D2D3 D4D5D6D7 |ABCDEFGHIJKLMNPOI
    0001A0 D8D9E2E3 E4E5E6E7 E8E9F0F1 F2F3F4F5 |QRSTUVWXYZ012345I
    0001B0 F6F7F8F9 C1C2C3C4 C5C6C7C8 C9D1D2D3 |6789ABCDEFGHIJKLMN
    0001C0 D4D5D6D7 D8D9E2E3 E4E5E6E7 E8E9F0F1 |NOPQRSTUVWXYZ012
    0001D0 F2F3F4F5 F6F7F8F9 C1C2C3C4 C5C6C7C8 |3456789ABCDEFGHIJ
    0001E0 C9D1D2D3 D4D5D6D7 D8D9E2E3 E4E5E6E7 |KLMNOPQRSTUVWXYZ
    0001F0 E8E9F0F1 F2F3F4F5 F6F7F8F9 C1C2C3C4 |YZ0123456789ABCD
          Press ENTER
  8 9          10          11
  
```

Note: The data in the data set record is displayed by disk sector. Each disk sector is 256 bytes long. A data set record may be less than, or greater than, 256 bytes and can overlap sector boundaries. If the system is unable to recover data from the disk, the data fields contain all dashes (hex 60).

Field	Description
1	The current partition number
2	The sector number of the current cursor position (displayed in hex, relative to the beginning of the data set)
3	The displacement within the sector (hex bytes) of the current cursor position
4	The sector number of the sector being displayed (relative to the beginning of the disk)
5	The sector number of the next sector to be displayed (relative to the beginning of the data set)
6	The error code
7	The name of the data set
8	The sector number (displayed in hex, relative to the beginning of the data set)
9	The displacement within the sector (hex bytes)
10	Hex data fields
11	Alpha data fields (EBCDIC representation of the hex data fields).

Note: The error code is displayed only if an error occurs when the record is read from the disk.

2. The cursor is in the first position of the STOP AT field.

Enter the sector number of the sector you want to display next. If you do not enter a number, the next sector is displayed. If you want sectors displayed only when an error occurs, enter any number greater than the total number of sectors in the data set.

3. If the sector to be displayed next has already been copied, it is reread from the output device and displayed with any previous modifications.

4. If the specified sector has not been copied, the program continues to copy sectors until that sector is encountered, and then displays the specified sector. If an error occurs before the specified sector is reached, the sector containing the error is displayed.
5. The data fields beginning in line 2 may contain incorrect characters. Any data field (hex or alpha), being displayed, can be modified before you press the ENTER key. See "Modifying a Data Record," for more information.

Each line of data contains 16 bytes of data. The number of data lines displayed on the screen is determined by the size of the display screen. The maximum number of data lines that can be displayed on the different size screens are:

Screen Size (Characters)	Data lines Displayed
480	4 (64 bytes)
960	8 (128 bytes)
1920	16 (256 bytes)

Modifying a Data Record

1. The Record prompt is on your display:

```

3 000100  SECTOR - 00258  STOP AT -          ERROR - 4040  SAMPLE
000100  C1C2C3C4  C5C6C7C8  C9D1D2D3  D4D5D6D7  |ABCDEFGHIJKLMNOP|
000110  D8D9E2E3  E4E5E6E7  E8E9F0F1  F2F3F4F5  |QRSTUVWXYZ012345|
000120  F6F7F8F9  C1C2C3C4  C5C6C7C8  C9D1D2D3  |6789ABCDEFGHIJKL|
000130  D4D5D6D7  D8D9E2E3  E4E5E6E7  E8E9F0F1  |MNOPQRSTUVWXYZ0|
000140  F2F3F4F5  F6F7F8F9  C1C2C3C4  C5C6C7C8  |23456789ABCDEFGH|
000150  C9D1D2D3  D4D5D6D7  D8D9E2E3  E4E5E6E7  |IJKLMNOPQRSTUVWX|
000160  E8E9F0F1  F2F3F4F5  F6F7F8F9  C1C2C3C4  |YZ0123456789ABCD|
000170  C5C6C7C8  C9D1D2D3  D4D5D6D7  D8D9E2E3  |EFGHIJKLMNOPQRST|
000180  E4E5E6E7  E8E9F0F1  F2F3F4F5  F6F7F8F9  |UVWXYZ0123456789|
000190  C1C2C3C4  C5C6C7C8  C9D1D2D3  D4D5D6D7  |ABCDEFGHIJKLMNOP|
0001A0  D8D9E2E3  E4E5E6E7  E8E9F0F1  F2F3F4F5  |QRSTUVWXYZ012345|
0001B0  F6F7F8F9  C1C2C3C4  C5C6C7C8  C9D1D2D3  |6789ABCDEFGHIJKL|
0001C0  D4D5D6D7  D8D9E2E3  E4E5E6E7  E8E9F0F1  |MNOPQRSTUVWXYZ0|
0001D0  F2F3F4F5  F6F7F8F9  C1C2C3C4  C5C6C7C8  |23456789ABCDEFGH|
0001E0  C9D1D2D3  D4D5D6D7  D8D9E2E3  E4E5E6E7  |IJKLMNOPQRSTUVWX|
0001F0  E8E9F0F1  F2F3F4F5  F6F7F8F9  C1C2C3C4  |YZ0123456789ABCD|
Press ENTER

```

38-26

Note: The data in the data set record is displayed by disk sector. Each disk sector is 256 bytes long. A data set record may be less than, or greater than, 256 bytes and can overlap sector boundaries. If the system is unable to recover data from the disk, the data fields contain all dashes (hex 60).

2. You can modify either the hex or alpha data fields. When the Record prompt is first displayed, you are only allowed to modify the data in the hex data fields. To modify the data in the alpha data fields, the following key sequence must be performed:
 - If you have a typewriter keyboard, press the CMD key and then press the SEL FMT key.
 - If you have a data entry keyboard, press the SEL FMT key.

If you wish to return to modifying the hex data fields, repeat the above procedure.

3. Press the  key (Field Advance) to place the cursor at the first position of the data field you want to modify.
4. Use the Cursor movement keys to position the cursor at the characters you want to modify.
5. Modify the characters of the displayed record where necessary.

Note: Press the HOME key to move the cursor to the first position of the STOP AT field. If the cursor is already at the first position of the STOP AT field, press the HOME key to copy the sector and display the previous sector.

6. Press the ENTER key. The modified sector is copied to the output device. The input data set is not changed.
7. If you want to print the screen, make the printer ready and press the PRINT key.

Procedure Termination

1. When the data recovery procedure is terminated, the following prompt is displayed:

```
Program terminated.  
Options are  
  1. Restart  
  2. Exit  
Select option:      Press ENTER      38-07
```

2. If you select option 1 and press the ENTER key, the Disk Recovery prompt (38-21) is displayed.
3. If you select option 2 and press the ENTER key, the Load prompt is displayed if in a foreground partition. Otherwise, the program exits and frees the partition.

The data recovery procedure can be terminated any time during the procedure by the CMD and End of Job key sequence.

IBM 5280
Distributed Data System
Machine Verification Manual
Order No. GA21-9357-3

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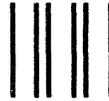
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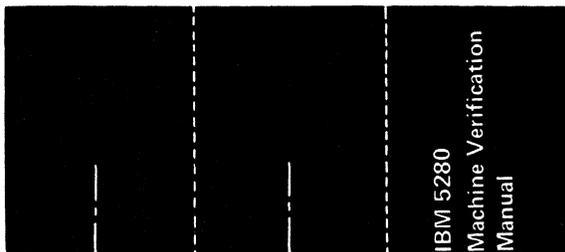
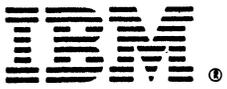
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Please Do Not Staple

Fold and tape







IBM 5280
Machine Verification
Manual