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Systems

IBM 3270
Information Display System
3274 Control Unit/System
Problem Determination Guide

IBM®

Fourth Edition (March 1981)

This edition (GA27-2850-3) obsoletes GA27-2850-2. It also obsoletes *IBM 3270 Information Display System Problem Determination (IBM 3274 Control Units and Attached Terminals),* GA27-2871-2. Information formerly in GA27-2871 is now included in this manual. Information concerning the IBM 3262 Printer and 3274 Control Unit, Models 21 and 31, has also been added.

Preface

This manual is intended to assist customer personnel in problem determination in the IBM 3270 Information Display System in which the 3274 Control Unit provides control for the subsystem.

Organization

This manual is composed of two Sections and three Appendixes, as follows:

Section 1. 3274 Control Unit Problem Determination. Is a guide for the person responsible for performing problem determination in the 3274 Control Unit and/or its attached terminals. Sometimes this guide will be used after the System Problem Determination procedures in Section 2 have identified the 3274 and/or its attached terminals as the likely source of the problem.

Section 2. System Problem Determination. Is a guide for the person responsible for performing problem determination on a system basis.

Appendix A. System Problem Determination Overview. Suggests an approach to problem determination from a system perspective. The person responsible for coordinating problem determination should become familiar with the concepts described in this section, with the system problem determination facilities available, and with the configuration of his system.

Appendix B. 3274 Operator Panels. Identifies and describes the function of the various switches and indicators (lights) on the 3274 Control Unit operator panel. The switches and indicators you have on your 3274 Control Unit will depend on its features, so be sure you choose the correct figure for your particular 3274.

Appendix C. Status Summary Display. Describes a concurrent test that you may wish to run to obtain statistical information about the various elements attached to your 3274.

How to Use This Manual

The appendixes are for reference. The person responsible for problem determination should read Appendix A to become familiar with the concepts and facilities it describes. Once familiar with them, Sections 1 and 2 can be used as guides when a problem occurs.

You may want to refer to Appendix B if you find it necessary to operate the control panel switches or determine the meaning of its indicators. If you choose to run a concurrent test, you will need to refer to Appendix C to interpret the displayed results of the test.

The problem determination procedures ask you certain questions, to take certain actions, and to record the results on the *3274 Control Unit Problem Report Form,* GX23-0203. A sample of this form is located on page 1-8. In some cases the procedures tell you to perform problem determination on one of the terminals attached to your 3274 Control Unit. Be sure you have a copy of the problem determination guide for each type of terminal you have on your system.

Related Publications

Following is a list of problem determination guides that you may need:

IBM 3262 Printer Models 3 and 13 Operator Instruction and Status Codes Cards, GX24-3749

IBM 3276 Control Unit Display Station Problem Determination Guide, GA18-2014

IBM 3278 Display Station Problem Determination Guide, GA27-2839

IBM 3279 Color Display Station Problem Determination Guide, GA33-3051

IBM 3287 Printer Models 1 and 2 Problem Determination Guide, GA27-3151

IBM 3287 Printer Models 1C and 2C Problem Determination Guide, GA27-3231

IBM 3289 Line Printer Models 1 and 2 Error Recovery and Problem Determination Guide, GA27-3141

Besides the *3274 Problem Report Form,* GX23-0203, you may also need:

IBM 3262 Printer Models 3 and 13 Trouble Report Form, GX24-3749

IBM 3276/3278/3279 Problem Report Form, GX23-0201

IBM 3287 Printer Models 1 and 2 Operator's Trouble Report, GX27-2923

IBM 3287 Printer Models 1C and 2C Operator's Trouble Report, GX27-2931

IBM 3289 Line Printer Models 1 and 2 Operator's Trouble Report Form, GX27-2922

You should also have a copy of *IBM 3274 Control Unit Description and Programmer's Guide,* GA23-0061. You may have to refer to it for information on status codes.

Other publications you may need are:

3270 Facility Error Recognition System (FERS) Service Aid Description, G229-7031

OS/VS Display Exception Monitoring Facility (DEMF) User's Guide, GC34-2003

Network Problem Determination Application Error Messages Manual, SC34-2012

Network Problem Determination Application Terminal Use Guide, SC34-2013

DOS/CICS User's Guide, G229-7030

OS/CICS User's Guide, G229-7029

Scope

For the purposes of this manual, the IBM 3270 Information Display System consists of a 3274 Control Unit and its attached printers and display stations. These attached units can include the following:

3262 Printers
3287 Printers
3289 Line Printers
3278 Display Stations
3279 Color Display Stations

Problem determination procedures for an IBM 3270 Information Display System that consists of an IBM 3276 Control Unit Display Station with its attached terminals are described in the *IBM 3270 Information Display System: System Problem Determination for 3276 Control Unit Display Stations,* GA18-2042.

Problem determination procedures for the IBM 3271 and 3272 Control Units, IBM 3275 and 3277 Display Stations, and IBM 3284, 3286, and 3288 Printers are described in the *IBM 3270 Information Display System: Problem Determination Guide,* GA27-2750, and are purposely omitted from this publication.

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Section 1. 3274 Control Unit Problem Determination

Start here for all problems on the 3274 Control Unit and its attached terminals.

- **Is the On indicator lit?**

YES NO

Go to C, page 1-5.

- **Is more than one attached terminal failing with the same symptom?**

YES NO

Perform problem determination on the failing terminal, using the problem determination guide for that terminal. If this has already been done, request service. See "Related Publications" in the Preface to this manual.

- **Are all attached terminals failing?**

YES NO

Check "NO," and identify all failing terminals in item 1 of a Problem Report Form.

Go to A, page 1-2.

Record this fact in the Comments section of the Problem Report Form.

Ensure that the proper diskette is installed.

Go to A, page 1-2.

(A) More Than One Attached Terminal Is Failing

Look at any of one of the powered-on 3278/3279 display stations.

- **Is [4] displayed on the first position of the Operator Information Area? (Display station and 3274 are ready.)**

YES ↓ NO → Go to (B), page 1-4.

- **Is ⊸z⊸ or PROG displayed in the Operator Information Area? (Communication or program problem between 3274 and host system.)**

YES ↓ NO → Go to (E), below.

Check the appropriate symbol, and record the 3-digit code displayed following the symbol in item 2 of the Problem Report Form.

- If ⊸z⊸ 501, 502, or 520 is displayed, check the following:
  - If loop-attached, ensure that the Local/Communicate switch is in the Communicate position. In addition, check the Data Speed switches and the Primary/Secondary switch for the correct settings.
  - If remote, check that the modem power and communication cable connectors are secure and that the modem is in normal operating mode.
  - If local, make sure the Power/Interface switch is in either the Local/Online or the Remote/Online position.
- If PROG 4XX (a 3-digit code beginning with a 4) is displayed, request assistance from the host system programmer.
- **Were any of the above actions taken?**

YES ↓ NO → Go to (E), below.

- **Does the same problem occur?**

YES ↓ NO → Resume operation.

(E)

- **Is A or B displayed in the Operator Information Area? (Display station and 3274 are connected to the host system.)**

YES ↓ NO → Call the host system operator to determine if the host system is operating correctly.

- **Is the host system operating correctly?**

YES ↓ NO → Wait for the host system problem to be corrected; then resume operation.

Go to (F), page 1-3.

Go to (B), page 1-4.

F

- **Is this 3274 attached to a loop?**

YES NO

Go to B, page 1-4.

- **Is the External indicator on?**

YES NO

Go to B, page 1-4.

- Perform problem determination on the loop using System Problem Determination (Section 2 of this manual). If this has already been done, go to B, page 3-4.

B

Record all symbols displayed in the operator information area of any 3278/3279 display station in item 2 on the Problem Report Form. Record the status of the 8 4 2 1 indicators in item 3a of the same Problem Report Form.

Warning: Pressing the IML pushbutton causes an interruption and temporarily disables all terminals attached to the 3274. If any attached terminals are in use, notify all terminal operators before proceeding.

If the 3274 is locally attached, the Power/Interface switch must be placed in the Local/Offline position and the Local/Offline indicator must light. (If the Local/Offline indicator does not light, record this fact in the Comments Section of the Problem Report Form and request service.)

Press and hold the IML pushbutton.

- **Do the 8 4 2 1 indicators light?**

YES NO

Record the status of the 8 4 2 1 indicators in item 3a of the Problem Report Form.

While observing the 8 4 2 1 indicators, release the IML pushbutton.

- **Did the 8 4 2 1 indicators flash on and off for about 1 minute, ending with all four indicators off?**

YES NO

Record the status of the 8 4 2 1 indicators in item 3a of the Problem Report Form, and request service.

- If you wish to continue operation under the same conditions that existed before the IML pushbutton was pressed, press the IML pushbutton while holding the ALT IML Address switch in the 1 position (this bypasses the IML Tests and allows the unit code to load).

- **Does the problem recur?**

YES NO

Resume operation.

Note: *If the problem recurs, do not press the IML pushbutton, but request service.*

- **Is this a 3274 Model 1C, 21C, 31C, or 51C?**

YES NO

Request service.

Continued on page 1-5.

Initialization/Power Problem

- **Is this an Encrypt/Decrypt failure (NNN code of 397, 398, or 399)?**

YES — Go to the Master Key Entry and Verification procedure in the *3274 Control Unit Operator's Guide,* GA23-0023. If master key verification fails, replace the battery and enter the master key.

NO — **Is this 3274 attached to a loop?**

YES — Request service.

NO — Go to step D, page 1-6.

C Power Problem

- **Does the On indicator light when the On/Off switch is turned on (I/O ←)?**

YES — Resume operation.

NO — **Is the 3274 power cord plugged into the proper outlet?**

YES — **Does the outlet have power?**

NO — Plug the power cord into the proper outlet, and turn the 3274 on.

Does the On indicator remain off?

YES — Resume operation.

NO — Resume operation.

Does the outlet have power?

YES — **Does the On indicator light?**

YES — Resume operation.

NO — Record this information in the Comments section of the Problem Report Form, and request service.

NO — Record this information in the Comments section of the Problem Report Form, and request service.

D

- **Is a symbol, followed by a 3-digit code, displayed in the Operator Information Area of an attached 3278/3279?**

YES NO

Record this fact, and any other facts concerning the problem, in the Comments section of the Problem Report Form, and request service.

- **Is 501, 502, 520, 521, 525, 529, 530, 531, 532, 534, 535, or 536 displayed?**

YES NO

For other 5XX codes, see the *3274 Description and Programmer's Guide,* GA23-0061.

- **Does this 3274 have an Integrated Modem? (3274 connects directly to a phone line.)**

YES NO

Go to **G**, page 1-7.

At the 3274, hold the Alt IML Address switch in the 2 position while momentarily pressing the IML pushbutton. After 1 minute, look at the 8 4 2 1 indicators.

- **Are all four indicators lit ?**

YES NO

A communication problem exists between the 3274 and the host system (No Carrier Detect).

Request assistance from your communication service personnel. When the problem is resolved, all four indicators will light.

Wait until all four indicators are lit and steady for 1 minute; then continue.

Perform a normal IML.

End problem determination, and resume operation. If the problem recurs, request service.

G

Place the Test/Operate switch, located on the connector at the modem/ Channel Service Unit cable, in the Test position.

At the 3274, hold the Alt IML Address switch in the 2 position while momentarily pressing the IML pushbutton. After 1 minute, look at the 8 4 2 1 indicators.

- **Are the indicators showing a steady 8 (☼ o o o)?**

YES NO

Record a "Wrap Test Failure" in the Comments section of the Problem Report Form, and request service.

- **Does this 3274 have the Digital Data Service (DDS) Adapter or X.21 Feature?**

YES NO

Go to **H**, below.

Return the Test/Operate switch to Operate and perform a normal IML.

Request that the host system operator restore this 3274 to the active list.

End problem determination and resume operation. If the problem recurs, request assistance from your communication service personnel.

H

Return the Test/Operate switch to Operate.

- **Are all four indicators lit?**

YES NO

A communication problem exists between the 3274 and the host system (no Carrier Detect from the modem).

Request assistance from your communication service personnel. When the problem is resolved, all four indicators will light.

Wait until all four indicators are lit and steady for 1 minute; then continue.

Perform a normal IML.

Request that the host system operator restore this 3274 to the active list.

End problem determination, and resume operation. If the problem recurs, request service.

IBM 3274 Control Unit
Problem Report Form

Please fill out this form before requesting service.

1. Are all attached terminals failing? YES NO
   If "NO" is checked, please identify all failing terminals:

2. Check any of the following symbols that are displayed in the operator information area of any failing display station:

   Subsystem Ready _____ 4

   Host Connection _____ A or B

   If one of these three symbols is displayed, please insert the 3-digit code following the symbol.

   Communication Problem _____ _____

   Machine Check Problem _____ _____

   Program Error _____ PROG _____

3a. Record the status of the 8 4 2 1 indicators before initializing the 3274. (Check which indicators are on; if all are off, check "All Off.")

8	4	2	1
O	O	O	O

All Off

3b. If the 3274 has the Loop Attachment, record the status of the Loop Indicators (check which indicators are on).

OK	External Check	Machine Check
O	O	O

4. Do all the 8 4 2 1 indicators light while the IML pushbutton is pressed and held? (If the 3274 is attached to a loop, the Line Ready, External, and Machine Check indicators should also light.) YES NO

5. Record the status of the 8 4 2 1 indicators after initializing the 3274. (Check which indicators are on; if all are off, check "All Off.")
   When requesting service, please report which of the indicators (step 5) are on.

8	4	2	1
O	O	O	O

All Off
Never Flashed

6. Comments (record any other symptom): _____

Address comments concerning this form to IBM Corporation, Department 52Q, Neighborhood Road, Kingston, New York 12401

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Section 2. System Problem Determination

Start here

- **Was the problem reported at a 3278 Display Station or 3279 Color Display Station?**

YES — NO

- **Was the problem reported at a 3287 Printer?**

YES — NO

The problem was reported at a 3289 Line Printer.

Go to L, page 2-12.

Go to H, page 2-9.

- **Is a cursor displayed at the failing display station?**

YES — NO

Go to C, page 2-4.

- **Is a horizontal line displayed across the screen at the failing display station?**

YES — NO

Go to C, page 2-4.

Press the upshift (⇧) key at a failing display station (if possible).

- **Is ⇧ displayed in the Operator Information Area?**

YES — NO

Set the Normal/Test switch to Test, then to Normal.

- **Is 4 displayed in the left portion of the Operator Information Area?**

YES — NO

The display station is apparently not ready with respect to the control unit. Verify the symptoms on other failing display stations by operating the Normal/Test switch to Test, then back to Normal.

- **Is more than one display station (attached to the same control unit) failing with the same symptom?**

YES — NO

Go to C, page 2-4.

Go to B, page 2-3.

Go to A, page 2-2.

Check Display Station Operation with Control Unit

(A)

- **Is ✕ ⊼ ⊓⊓⊓ displayed in the Operator Information Area indicating a machine check?**

YES — NO → Go to (E), page 2-6.

Set the Normal/Test switch to Test, then to Normal.

Press the Reset key, record the symptoms on the appropriate Problem Report Form, and retry the failing operation. (See Note 2, page 2-3.)

- **Does the same failure occur?**

YES — NO → End problem determination, and resume operation.

- **Is more than one display station (attached to the same 3274 Control Unit) failing?**

YES — NO → Go to (C), page 2-4.

Go to (B), page 2-3.

B

DANGER

Do not connect or disconnect device cables during an electrical storm.

Warning: Before cables are connected or disconnected, verify that the attached terminals are not being used.

If device cables have been exchanged at the control unit ports and/or at the terminals, return them to their original connections.

- If display stations were reconnected, set the Normal/Test switch to Test, then to Normal, at all reconnected display stations.
- If the terminals affected were printers, press Reset and Test at 3287 Printers or press Reset at 3289 Printers.

Perform problem determination on the 3274 Control Unit, using Section 1 of this manual.

Notes:

1. *Turning the 3274 Control Unit off and then on or initializing the 3274 affects all terminals attached to that 3274.*
2. *Turning any terminal or control unit off, and then on, or initializing a control unit may affect its connection to the host system. It may be necessary to reestablish that connection to the host system or to log on to the host system when performing a reset, retry, and recovery operation. To prevent a system "hang" condition, the proper sequence must be used when turning a locally attached 3274 off or on. A locally attached 3274 has a Power/Interface rotary switch on its control panel. See Appendix B of this manual.*

C

DANGER

Do not connect or disconnect device during an electrical storm.

Warning: Before cables are connected or disconnected, verify that the attached terminals are not being used.

If device cables have been exchanged at the control unit ports and/or at the terminals, return them to their original connections.

If display stations were reconnected, set the Normal/Test switch to Test, then to Normal, at all reconnected display stations.

Perform problem determination on the failing display station, using the *3278 Display Station Problem Determination Guide,* GA27-2839, or the *3279 Color Display Station Problem Determination Guide,* GA33-3051.

Press the Reset key, and retry the failing operation. (See Note 2, page 2-3.)

- **Has the problem been determined to be in the display station?**

YES

NO

Exchange the device cable from the failing display station with the device cable from a known working display station *at the control unit ports.*

Set the Normal/Test switch to Test, then to Normal, at both display stations.

Press the Reset key, and retry the failing operation. (See Note 2, page 2-3.)

- **Does the same display station fail?**

YES

NO

Go to B, page 2-3.

Go to D, page 2-5.

Report the problem and resume operation.

D

Probable device cable or display station problem.

DANGER
Do not connect or disconnect device cables during an electrical storm.

Warning: Before cables are connected or disconnected, verify that the attached terminals are not being used.

Return the device cables to their original control unit ports.

Set the Normal/Test switch to Test, then to Normal, at both display stations.

- **Is it possible to exchange the device cable at the failing display station with the device cable at a known working display station** *at the terminal end* **of the cables?**

YES

NO

Probable device cable or display station problem.

Ensure that all device cables are connected to their original connectors at both ends.

Report the problem.

Exchange device cables *at the terminal ends.*

Set the Normal/Test switch to Test, then to Normal, at both display stations.

Press the Reset key, and retry the failing operation. (See Note 2, page 2-3.)

- **Does the same display station fail?**

YES

NO

Probable device cable failure.

Return the device cables to their original connections.

Set the Normal/Test switch to Test, then to Normal, at both display stations.

Request assistance from the personnel responsible for device cables.

Probable display station failure.

Return the device cables to their original connections.

Set the Normal/Test switch to Test, then to Normal, at both display stations.

Report the problem.

Check Logical Connection between Display Station and Host System

E

- **Is A or B displayed to the right side of the 4 in the Operator Information Area, indicating that the display station is logically connected to the host system?**

YES NO

Inform the host system operator of the problem.

- **Is the host system operating without error and communicating with the failing 3270 Information Display System?**

YES NO

When the host problem has been resolved, resume operation.

- **Is X PROGnnn displayed in the Operator Information Area, indicating a program check?**

YES NO

Go to F, page 2-7.

Press the Reset key, record the symptoms on the appropriate Problem Report Form, and retry the failing operation. (See Notes 2, page 2-3.)

- **Does the operation still fail?**

YES NO

End problem determination, and resume operation.

Probable data stream problem from the host system.

Record the sequences of the last keystrokes before the problem, if applicable.

Report the problem to the host system support programmer for additional problem determination and recovery.

F

- **Is X —\z_nnn displayed in the Operator Information Area indicating a communication check?**

YES

NO

- **Is more than one display station (attached to the same control unit) failing?**

YES

NO

Go to C, page 2-4.

Go to B, page 2-3.

Press the Reset key, record the symptoms on the appropriate Problem Report Form, and retry the failing operation. (See Note 2, page 2-3.)

- **Does the operation still fail?**

YES

NO

End problem determination, and resume operation.

Perform problem determination in the control unit PDG that relates to communication check (X —\z_) problems. Refer to "Wrap Test" on page 1-6. Also, see Notes 1 and 2, page 2-3.

- **Is the problem determined to be in the control unit?**

YES

NO

Probable communication facility problem.

- **Is the host system on and operating without error?**

YES

NO

When the host system problem is resolved, resume operation.

Go to G, page 2-8.

Go to B, page 2-3.

G

- **Is the Facility Error Recognition System (FERS), the Display Exception Monitoring Facility (DEMF), or the Network Problem Determination Application (NPDA) available? See Note below.**

YES NO

Ensure that problem determination has been performed at the 3270 Information Display System (control unit, display station, and printer).

- **Was the problem isolated to the 3270 Display System?**

YES NO

Report the problem to the host system operator or to the Network Control Center for additional problem determination.

Record the problem on the proper report form.

Analyze the problem, using the following FERS, DEMF, or NPDA facilities:

- Configuration data
- Communication link statistics
- Communication line statistics
- Sense data
- Status data

For details, see the *3270 Facility Error Recognition System (FERS) Service Aid Description,* G229-7031, the *OS/VS Display Exception Monitoring Facility (DEMF) User's Guide,* GC34-2003, or the *Network Problem Determination Application (NPDA) Error Messages Manual,* SC34-2012, and the *Network Problem Determination Application (NPDA) Terminal Use Guide,* SC34-2013.

Note: *To determine if FERS, DEMF, or NPDA is available on your host system, perform the following procedure:*

1. *Clear the display screen, type in FERS, and press the ENTER key. The FERS menu will be displayed, if FERS is available.*
2. *Clear the display screen, type in DEMF, and press the ENTER key. The DEMF menu will be displayed, if DEMF is available.*
3. *If neither FERS nor DEMF is available, inquire from the Network Control Center or the host system operator if the Network Communication Control Facility (NCCF) and NPDA are available. If NPDA is available, request that it be invoked to perform problem determination for your terminal.*

H

- **Is the CHECK light on?**

YES NO

Ensure that the control unit is on and the device is connected to the control unit and to the printer.

- **Is the CU SIGNAL light on?**

YES NO

Either the control unit is not polling the printer or there is a device cable problem.

DANGER

Do not connect or disconnect device cables during an electrical storm.

Warning: Before cables are connected or disconnected, verify that the attached terminals are not being used.

If there is a known working printer attached to the control unit, exchange the device cable to the working printer with the device cable to the failing printer *at the control unit ports.*

Note: *At the 3274 Control Unit, do not exchange a device cable from an A port with one from a B port.*

At the failing printer:

1. Press and hold the Test switch.
2. Press and release the Reset switch.
3. Release the test switch.

- **Is the CU SIGNAL light on after the internal tests run?**

YES NO

Go to **K**, page 2-11.

Go to **B**, page 2-3.

At the failing printer:

1. Press and hold the Test switch.
2. Press and release the Reset switch.
3. Release the Test switch.

- **Is the Ready light on after the internal tests run?**

YES NO

Go to **J**, page 2-10.

Go to **I**, page 2-10.

Perform problem determination on the failing printer, using the *3287 Printer Models 1 and 2 Problem Determination Guide,* GA27-3151 or the *3287 Printer Models 1C and 2C Problem Determination Guide,* GA27-3231.

J M I

To print out the PCI A storage area:

1. Press and hold the Test switch.
2. Press and release the Form Feed switch.
3. Release the Test switch.

- **Does AA3274AA print out for storage addresses 004A through 004D?**

YES NO

Go to J, this page.

The printer is connected to, is enabled by, and has received a message from, the control unit.

- **Is a printer failing during a host-initiated print operation?**

YES NO

The printer is failing during a local copy operation. Request assistance at the control unit location.

Report the problem to the host system operator.

Perform problem determination on the failing printer, using the *3287* or *3289 PDG* (*3287 Printer Models 1 and 2 Problem Determination Guide,* GA27-3151; *3287 Printer Models 1C and 2C Problem Determination Guide,* GA27-3231; or *3289 Line Printer Models 1 and 2 Error Recovery and Problem Determination Guide,* GA27-3141).

- **Was the problem determined?**

YES NO

Perform problem determination on the control unit, using Section 1 of this manual.

- **Was the problem determined?**

YES NO

Request assistance.

Resume operation.

Request assistance if required.

K

DANGER

Do not connect or disconnect device cables during an electrical storm.

Warning: Before cables are connected or disconnected, verify that the attached terminals are not being used.

Return device cables to their original control unit ports.

At the reconnected printers:

1. Press and hold the Test switch.
2. Press and release the Reset switch.
3. Release the Test switch.

- **Is it possible to exchange the device cable at the failing printer with the device cable at a known working printer, at the printer end of the cable?**

YES

NO

Probable cable or printer problem.

Report the problem.

Exchange the device cable from the failing printer with the device cable from a known working printer, at the printer end of the cable.

At the failing printer:

1. Press and hold the Test switch.
2. Press and release the Reset switch.
3. Release the Test switch.

- **Is the CU SIGNAL light on after the internal tests run?**

YES

NO

Probable 3287 Printer problem.

Return the device cables to their original connections.

At the reconnected printers:

1. Press and hold the Test switch.
2. Press and release the Reset switch.
3. Release the Test switch.

Report the problem, and request assistance.

Probable device cable problem.

Return the device cables to their original connections.

At the reconnected printers:

1. Press and hold the Test switch.
2. Press and release the Reset switch.
3. Release the Test switch.

Request assistance from the personnel responsible for device cables.

L

- **Is the CHECK light on?**

YES — NO

- **Is the READY light on?**

YES — NO

Press the Enable Print switch.

Press the Reset switch.

- **Is the READY light on after the internal tests have run?**

YES — NO

- **Is there another 3289 Line Printer, attached to the same 3274 Control Unit, that is working properly?**

YES — NO

Go to J, page 2-10.

Go to N, page 2-13.

Print "Short Memory" via the Print Dump Routine, as follows:

1. Press the Hold Print switch.
2. Set Selector switch to 70.
3. Press the Code switch.

- **Does AA3274AA print out for storage addresses 004A through 004D?**

YES — NO

- **Is there another 3289 Line Printer, attached to the same 3274 Control Unit, that is working properly?**

YES — NO

Go to J, page 2-10.

Go to N, page 2-13.

Go to M, page 2-10.

Perform problem determination on the failing printer, using the *3289 Line Printer Models 1 and 2 Error Recovery and Problem Determination Guide,* GA27-3141.

N

DANGER

Do not connect or disconnect device cables during an electrical storm.

Warning: Before cables are connected or disconnected, verify that the attached terminals are not being used.

Exchange the device cable from the failing printer with the device cable from a known working printer *at the control unit ports.*

Note: *At the 3274 Control Unit, do not exchange a device cable from an A port with one from a B port.*

At the failing printer:

1. Press the Enable Print switch.
2. Press the Reset switch.

- **Is the READY light on after the internal tests run?**

YES

NO

Device cable or printer problem.

Return the device cables to their original control unit ports.

At both reconnected printers:

1. Press the Enable Print switch.
2. Press the Reset switch.

- **Is is possible to exchange the device cable at the failing printer with the device cable at a known working printer** *at the terminal end* **of the cables?**

YES

NO

Probable device cable or printer problem.

Report the problem, and request assistance.

Go to O, page 2-14.

Go to B, page 2-3.

O

Exchange the device cable at the failing printer with the device cable from a known working printer at the printer end of the cable.

Note: *Do not exchange device cables between a 3289 Line Printer and a B type printer (3284, 3286, and 3288).*

At the failing printer:
1. Press the Enable Print switch.
2. Press the Reset switch.

- **Is the READY light on after the internal tests have run?**

YES

NO

Probable printer problem.

Return the device cables to their original connections.

At both reconnected printers:
1. Press the Enable Print switch.
2. Press the Reset switch.

Report the problem, and request assistance.

Probable device cable problem.

Return the device cables to their original connections.

At both reconnected printers:
1. Press the Enable Print switch.
2. Press the Reset switch.

Request assistance from the personnel responsible for device cables.

Appendix A. System Problem Determination Overview

Although a problem can occur at any point within the system, it is most likely to become apparent at one or more of the IBM 3270 terminals. To determine the probable location of the problem within the system, you must be familiar with the configuration of your system.

Problem Determination Levels

Problem determination may be performed at various levels. These levels are listed below in ascending sequence, starting with the lowest level:

1. The 3270 terminal level.
2. The 3270 Information Display System level, which, for problem determination purposes, amounts to the control unit level.
3. The communication facility level. Although some tests may be initiated from the control unit or the host system, problem determination at this level should be coordinated at the host system.
4. The host system level, which may have problem determination facilities that are available to all lower levels.

To expedite problem determination, when a problem is detected at one level of the system, the program should be reported to the coordinator at the next higher level. To minimize the impact on the system, problem determination should be done at the lowest level consistent with the symptoms.

To assist you in performing problem determination procedures on the 3270 Information Display System and its associated communication facilities, problem determination facilities have been provided. These are briefly described below, with a reference to the appropriate publication for further details.

Among the problem determination facilities that may be available at the host system are the Display Exception Monitoring Facility (DEMF), the Facility Error Recognition System (FERS), and the Network Problem Determination Application (NPDA). DEMF, FERS, and NPDA are network problem determination facilities, which are also briefly described later under "The Host System."

If DEMF, FERS, or NPDA is available on your host system, it might be advantageous to use that facility to determine the level at which to address the problem before attempting local problem determination procedures. The following problem determination facilities, however, are designed for most cases and start at the terminal level.

Problem Determination Facilities

Each level of the system has associated problem determination facilities that are used to isolate 3270 type failures within the system. Some of these facilities are used concurrently with the operation of other system elements at that level and require only the dedicated resource being tested. An example of these facilities is the concurrent test contained in the 3270 control units, which is required to test the features of the 3278 Display Station. Other facilities are used offline and require dedicated use of all the resources affected. An example of these facilities is the basic assurance test contained in the 3270 control units. The facilities are listed by the 3270 unit and system level to which they apply.

3278 Display Station and 3279 Color Display Station

The 3278 Display Station and the 3279 Color Display Station and their keyboards can be tested offline from the control unit. The facilities are:

- A display character check of the character set. Analysis of this test can determine if the proper characters are interpreted in the display station and if every character position on the display screen is usable.
- A keyboard check that displays a character representative of each keyboard key, except the RESET (control) key, that is pressed.
- Lights that indicate the readiness status of the display station.
- Controls that determine if the status is on/off or test and that control the display screen brightness of the display station. The selector light pen, color, programmed symbols, and other features can be tested via concurrent tests resident in the control unit.

See the *IBM 3278 Display Station Problem Determination Guide,* GA27-2839, and the *IBM 3279 Color Display Station Problem Determination Guide,* GA33-3051, for details on the use of these facilities.

3287 Printer and 3289 Line Printer

The problem determination facilities in the 3287 Printer and the 3289 Line Printer are basically the same. The details concerning the operation of these facilities are contained in the *IBM 3287 Printer Problem Determination Guide,* GA27-3151, and *IBM 3289 Printer Problem Determination Guide,* GA27-3141.

The facilities are:

- Lights that indicate the readiness status, error check status, test status, and control unit connection status of the printer.
- Lights that define the conditions causing the error status, and the operational status of the printer.

- Switches that control the on/off status, test status, and buffer print status of the printer.
- Tests that automatically test the printer and initialize it for operation.

3274 Control Unit

The 3274 Control Unit is the nucleus of the 3270 Information Display System, of which it is a part. Its problem determination facilities are used to test and isolate the control unit within the 3270 Information Display System and to isolate the 3270 Information Display System from the remainder of the system. The use of these facilities normally affects the entire 3270 Information Display System; therefore, they should be used only when the 3274 Control Unit is suspected of failing.

The facilities are:

- A basic test that verifies that the base control unit is functioning properly. This test is run automatically when power is turned on; or it can be initiated by pressing the IML pushbutton (without pressing the Alt IML Address switch).
- A remote interface test that is run as part of the basic test, or separately, by pressing the IML pushbutton while holding the Alt IML Address switch in the 2 position. This applies only to remotely attached 3274 Control Units.
- Lights that indicate test-failure status during the IML process or retry status during the operational state.
- A light that indicates the local/remote power status of the control unit.
- A Power/Interface switch that selects the online/offline status of the power. This switch is present only on locally attached 3274 Control Units.

3270 Information Display System

For the purposes of this publication, the 3270 Information Display System consists of the 3274 Control Unit and its attached 3278 and 3279 Display Stations, 3287 Printers, and 3289 Line Printers.

Facilities exist in the control unit to determine if the problem is internal or external to the 3270 Information Display System. If the problem appears to be internal, these facilities are also used to determine which unit, within the system, is the probable cause of the problem.

The facilities are as follows:

- Concurrent tests are available that test the path from the control unit to the attached terminals and provide a test pattern which allows testing the 3278 and 3279 Display Station features.

These tests can be initiated from any display station with a keyboard, to itself or to any other display station within the 3270 Information Display System, concurrently with the normal operation of the 3279 Information Display System. When testing another terminal, ensure that the terminal to be tested is available for test.

- A test is available that displays the trouble status of all attached terminals within the 3270 Information Display System. (See Appendix C.) This test can be initiated from a 3278 or 3279 keyboard and is run concurrently with other 3270 Information Display System operations.
- A test message is available at the 3287 or 3289 Printer immediately after the printer is turned on (provided the control unit is on). To minimize the overprinting of usable information when the printer is functioning online, this message can be printed only when the printer is in test status.
- The physical locations for attaching the device cables to the control unit are readily accessible. The connectors contained in this area do not require the use of tools or special equipment to connect or disconnect. See the *IBM 3270 Information Display System: 3274 Control Unit Planning and Setup Guide,* GA27-2827. This permits the interchanging of device cables at the ports to determine if the problem exists in the terminal or in the control unit.

DANGER
Do not connect or disconnect the device cables during an electrical storm.

Warning: Before cables are connected or disconnected, verify that the attached terminals are not being used.

- Interface wrap tests are available for testing the link when the 3274 is remotely attached. This test interrupts the operation of all attached terminals; therefore, it should be performed only when the entire 3270 Information Display System is apparently failing or when symptoms indicate that the problem is in the communication facility, external to the 3270 Information Display System.
- Three check condition symbols (, and PROG) and their respective numeric codes are displayed in the Operator Information Area of the 3278 or 3279 Display Station. The symbol is used to define the major problem category, and the numeric code is used to further define the problem. See *IBM 3274 Control Unit Description and Programmer's Guide,* GA23-0061 for the significance of the and PROG symbols and codes.

- There are also functional symbols that indicate the readiness status, the host attachment status, and operator activity, displayed in the Operator Information Area of the 3278 or 3279 Display Station.
- The 3274 Control Unit has indicators that light if the problem is probably internal or external to the control unit.

The Host System

The host system consists of the central processing unit (CPU), the channel, and the communication controller or transmission control unit. Communication facilites connect the host system to attached terminals or subsystems, including the 3270 Information Display System.

A facility may reside in the host system that can be used for problem determination to the suspected 3270 Information Display System. This facility can be initiated from the suspected 3270 Information Display System or from other elements of the same system.

- The 3270 Information Display System error statistics and transmission line error statistics are logged at the host system through the Facility Error Recognition System (FERS) facility. The retrieval of this data through the FERS facility permits problem determination to the suspected 3270 Information Display System.

  When a nonrecoverable error occurs, it is logged at the host system. The data is retrieved through the display stations and can be displayed in various formats, as follows:

  - A summary of errors by nonswitched line or line groups.
  - A summary of errors by 3270 control unit on the specified line.
  - A summary of errors by attached terminal on the specified 3270 control unit and a count of 3270 control unit errors, not related to any terminal.
  - A summary of errors on a specified terminal in chronological order.
  - Additional data describing an error.
  - Channel status word (CSW) and/or sense bit combinations.

  See the *3270 Facility Error Recognition System (FERS) Service Aid Description,* G229-7031, the *DOS/CICS User's Guide,* G229-7030, and the *OS/CICS User's Guide,* G229-7029, for configuration, implementation, and operation information.

- Display Exception Monitoring Facility (DEMF) is a problem determination tool that is used in isolating probelms within a communications

network. The process progressively points to each most probable failing component (a line, a control unit, or a terminal). User-oriented images of permanent error counts for all lines, selected lines, control units, and terminals are helpful in determining the location of the problem. Exceptional status conditions, and their interpretations, are provided at the terminal level to aid in determining the most probable cause of the problem.

This data is presented as:

- Error counts for remote or local 3270 control units
- Error counts for all 3270 control units for the specified line, and/or all line errors for the specified line
- Error counts, by attached terminal, for the specified 3270 control unit
- A status description, in chronological order, of specific line or terminal errors
- An explanation of the selected error for the terminal
- A list of possible causes for various combinations of 3270 sense and and status conditions

Refer to the *OS/VS Display Exception Monitoring Facility User's Guide,* GC34-2003, for details concerning the required software configuration, communication facility, and operating procedures.

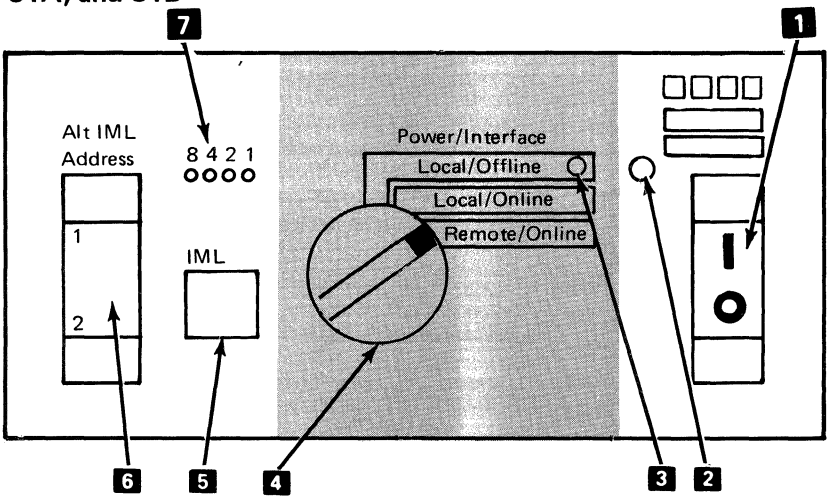
- Network Problem Determination Application (NPDA) facilities permit recording, retrieval, and display of statistical data from the 3274 Control Unit. The data is presented as:
  - Communication link test statistics
  - Statistical counts of communication errors, machine errors, and SNA protocol errors
  - Engineering change information relative to the 3274 Control Unit

Refer to the *Network Problem Determination Terminal User Guide,* SC34-2013, and the *Network Problem Determination Application Error Messages Manual,* SC34-2012, for software configuration, communication, and operating procedures.

If DEMF, FERS, or NPDA is available in your system, it can be accessed by any 3270 terminal. An operator can request data about his own terminal or about any other terminal in the network. An operator can ask for a specific terminal's error data or step through the higher levels (for example, line, control unit) of error information before narrowing the search to a suspected terminal. DEMF, FERS, or NPDA cannot be all that is required for problem determination.

Appendix B. Operator Panels

3274 Operator Panel – Models 1A, 1B, 1D, 21A, 21B, 21D, 31A, and 31D

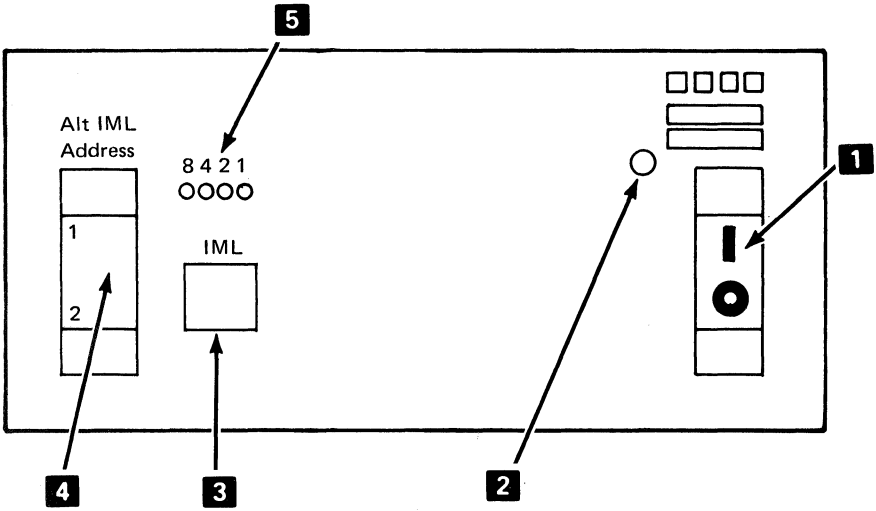


Legend:

Locally attached 3274s only

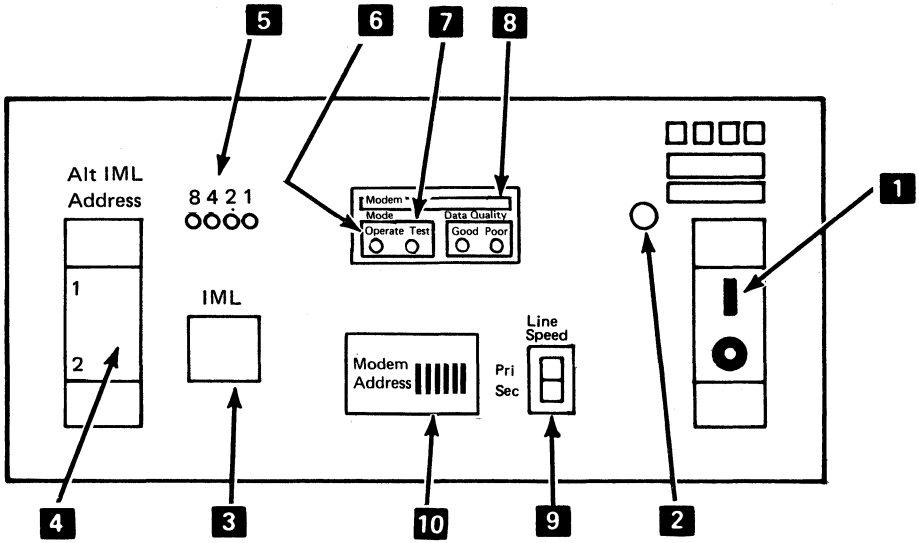
Ref	Description
1	On/Off switch: ▌ = On; ○ = Off.
2	On indicator: Indicates the 3274 is on.
3	Local/Offline indicator: Indicates the 3274 is in Local/Offline mode.
4	Power/Interface switch: (on locally attached 3274s only): • Local/Offline: Set to this position, and wait for the Local/Offline indicator to light before turning the 3274 off or performing a manual IML. • Local/Online: Permits turning the 3274 on regardless of the host system power state. • Remote/Online: 3274 power is controlled by the host system power state.
5	IML (Initial Machine Load) pushbutton: Pressing and holding causes a basic test to run. When the pushbutton is released, IML tests start. At completion, the machine is loaded.
6	Alt IML Address switch: • 1: Holding, while pressing the IML pushbutton, bypasses the tests and loads the machine directly. Use only after normal IML fails. • 2: Holding, while pressing the IML pushbutton, causes extended remote interface tests to run (not operational if locally attached).
7	8 4 2 1 indicators: These are lighted while the IML pushbutton is held. During IML, they follow the test sequence. At completion, they all go out. During operation, they indicate operational status.

3274 Operator Panel — Models 1C, 21C, and 31C without Integrated Modem



Ref	Description
1	On/Off switch: ▌ = On; ● = Off.
2	On indicator: Indicates the 3274 is on.
3	IML (Initial Machine Load) pushbutton: Pressing and holding causes a basic test to run. When the pushbutton is released, IML tests start. At completion, the machine is loaded.
4	Alt IML Address switch: • 1: Holding, while pressing the IML pushbutton, bypasses the tests and loads the machine directly. Use only after normal IML fails. • 2: Holding, while pressing the IML pushbutton, causes extended remote interface tests to run (not operational if locally attached).
5	8 4 2 1 indicators: These are lighted while the IML pushbutton is held. During IML, they follow the test sequence. At completion, they all go out. During operation, they indicate operational status.

3274 Operator Panel — Model 31C with Integrated Modem



Ref	Description
1	On/Off switch: ▌ = On; ● = Off.
2	On indicator: Indicates the 3274 is on.
3	IML (Initial Machine Load) pushbutton: Pressing and holding causes a basic test to run. When the pushbutton is released, IML tests start. At completion, the machine is loaded.
4	Alt IML Address switch: • 1: Holding, while pressing the IML pushbutton, bypasses the tests and loads the machine directly. Use only after normal IML fails. • 2: Holding, while pressing the IML pushbutton, causes extended remote interface tests to run (not operational if locally attached).
5	8 4 2 1 indicators: These are lighted while the IML pushbutton is held. During IML, they follow the test sequence. At completion, they all go out. During operation, they indicate operational status.
6	Operate: Indicates that the integrated modem is ready for use.
7	Test: Indicates that IML diagnostics or data link diagnostics are being performed.

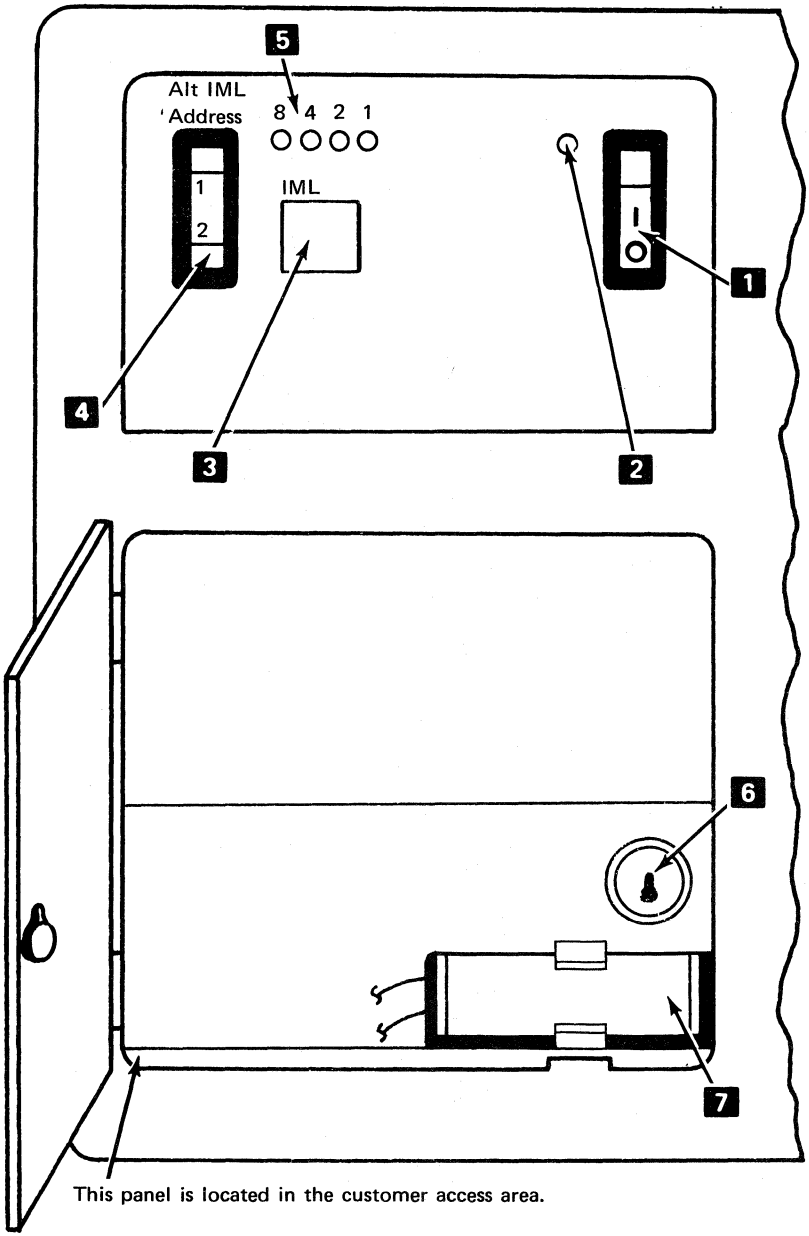
Ref	Description
8	Data Quality: The Good and Poor indicators are used to indicate the following:

Good	Poor	Meaning
On	Off	Data received is good.
Flashing	Off	Most data received is good.
Off	On	Most data received is not usable.
Off	Off	Data cannot be received.

9 Line Speed: In the Pri position, the modem operates at normal speed; in the Sec position, the modem operates at half speed.

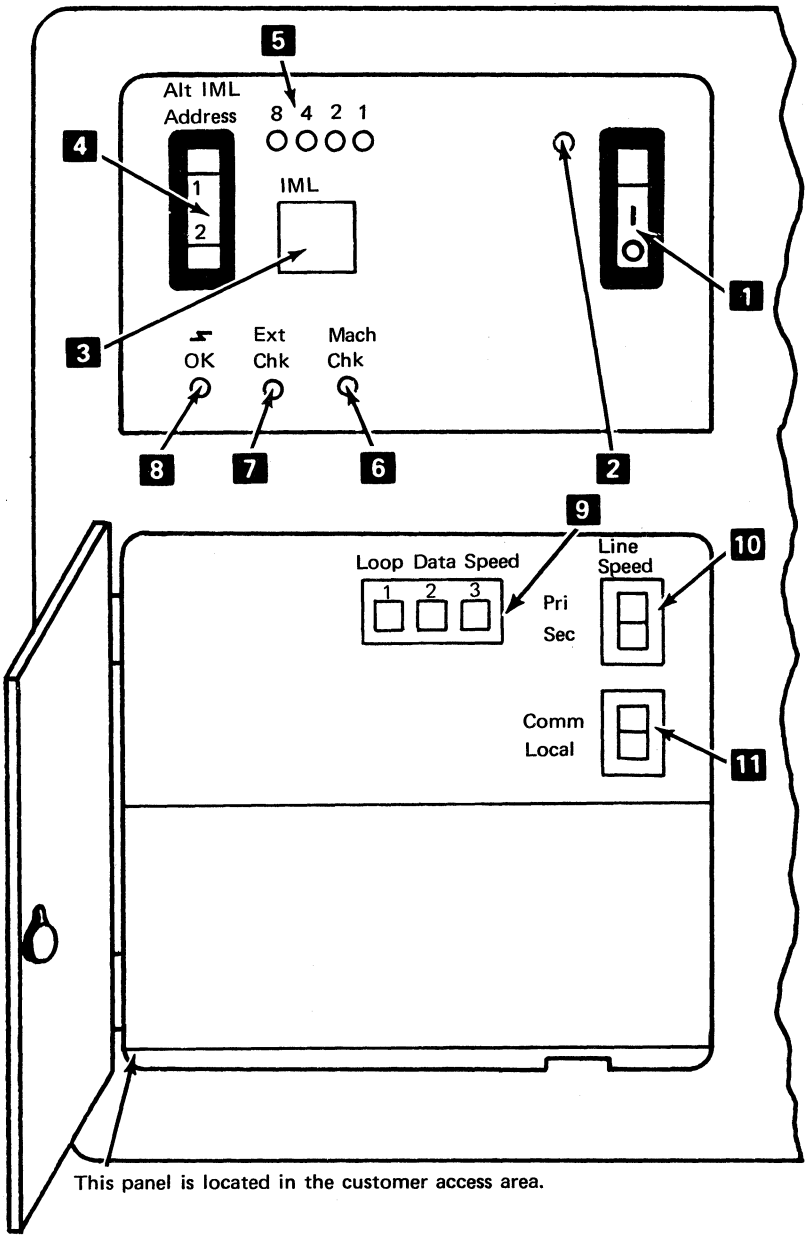
10 Modem Address: Used for the Data Link Problem Determination Aids. It should be set to the binary equivalent of the SDLC or BSC control unit address.

3274 Operator Panel – Model 51C with Digital Data Service (DDS) Adapter or X.21 Feature with/without Encrypt/Decrypt Feature



Ref	Description
1	On/Off switch: [1] = On; [O] = Off.
2	On indicator: Indicates the 3274 is on.
3	IML (Initial Machine Load) pushbutton: Pressing and holding causes a basic test to run. When the pushbutton is released, IML tests start. At completion, the machine is loaded.
4	Alt IML Address switch: • 1: Holding, while pressing the IML pushbutton, bypasses the tests and loads the machine directly. Use only after normal IML fails. • 2: Holding, while pressing the IML pushbutton, invokes adapter and wrap tests.
5	8 4 2 1 indicators: These light while the IML pushbutton is held. During IML, they follow the test sequence. At completion, they all go out. During operation, they indicate operational status.
6	Encrypt/Decrypt Key Switch—Allows a new master key to be entered when in the horizontal position.
7	Encrypt/Decrypt Battery—Allows the master key to be maintained in the 3274 when power is off.

3274 Operator Panel – Model 51C with Loop Attachment



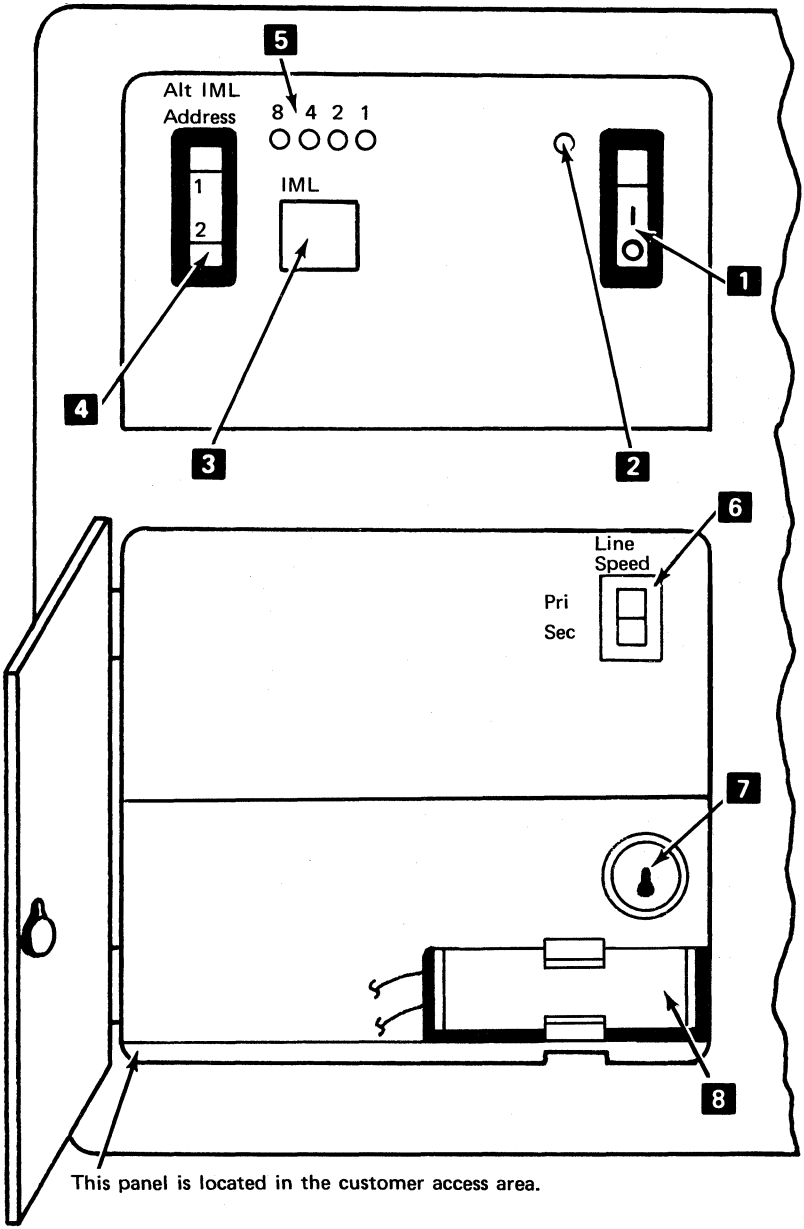
Ref	Description
1	On/Off switch: [1] = On; [O] = Off.
2	On indicator: Indicates the 3274 is on.
3	IML (Initial Machine Load) pushbutton: Pressing and holding causes a basic test to run. When the pushbutton is released, IML tests start. At completion, the machine is loaded.
4	Alt IML Address switch: • 1: Holding, while pressing the IML pushbutton, bypasses the tests and loads the machine directly. Use only after normal IML fails. • 2: Holding, while pressing the IML pushbutton, invokes the adapter and wrap test.
5	8 4 2 1 indicators: These light while the IML pushbutton is held. During IML, they follow the test sequence. At completion, they all go out. During operation, they indicate operational status.
6	Machine Check indicator: Indicates problems internal to the 3274.
7	External Check indicator: Indicates errors external to the 3274.
8	OK (Line Ready indicator): Indicates that a valid message was received within the last 8 seconds.
9	Loop Data Speed Switches (up is ON, down is OFF)

Setting				Speed (bps)	
1	2	3		Pri	Sec
Off	Off	Off	---	9600	4800 or 38, 400* (Pri)
Off	Off	On	---	9600	2400
Off	On	Off	---	4800	2400
On	Off	Off	---	2400	1200
On	On	Off	---	1200	600

*Direct Link only

10	Primary/Secondary Speed Switch — Used to select the primary or secondary speed as shown in 9 above under "Speed (bps)".
11	Local/Communicate Switch — Used to isolate problems on the loop. In the Local position, the 3274 is disconnected from the loop; in the Communicate position, the 3274 is connected to the loop.

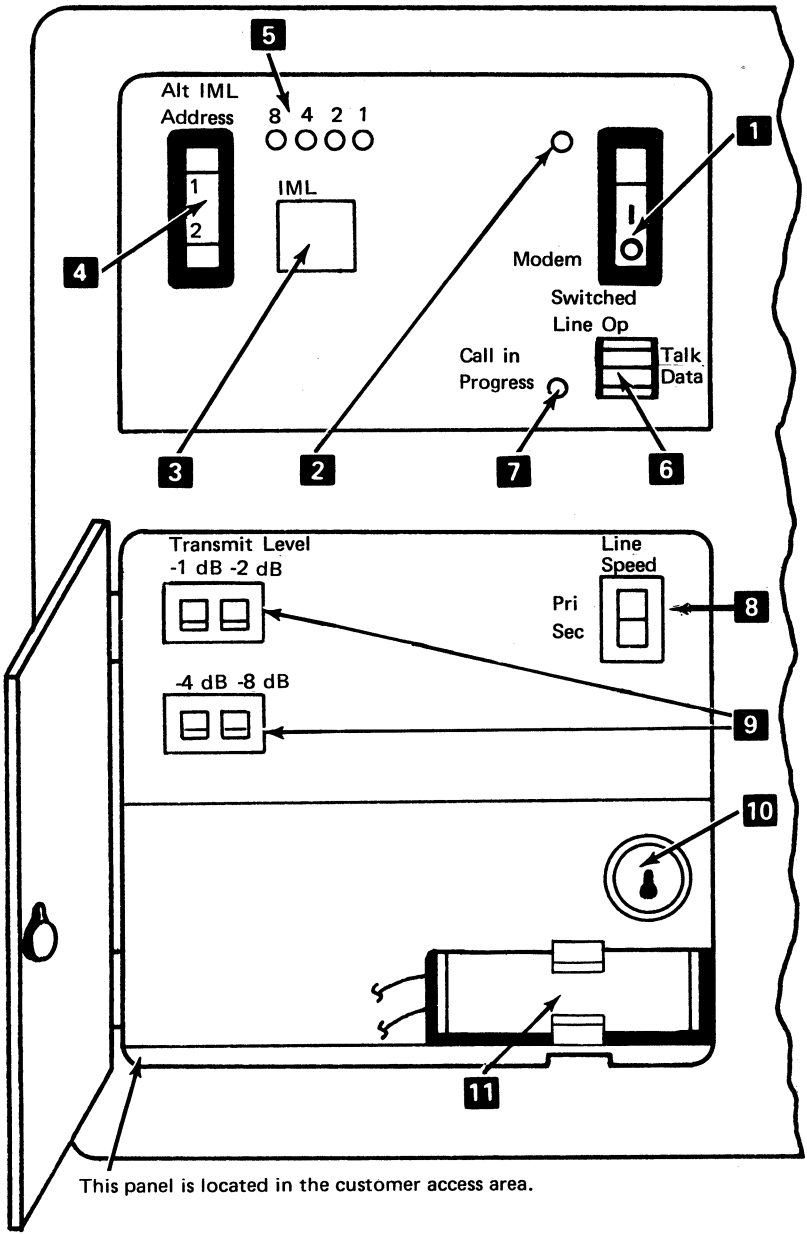
3274 Operator Panel — Model 51C with 1200-BPS Integrated Modem or External Modem



Ref	Description
1	On/Off switch: ⎡1⎤ =On; ⎣O⎦ = Off.
2	On indicator: Indicates the 3274 is on.
3	IML (Initial Machine Load) pushbutton: Pressing and holding causes a basic test to run. When the pushbutton is released, IML tests start. At completion, the machine is loaded.
4	Alt IML Address switch: • 1: Holding, while pressing the IML pushbutton bypasses the tests and loads the machine directly. Use only after normal IML fails. • 2: Holding, while pressing the IML pushbutton, invokes the adapter and wrap test.
5	8 4 2 1 indicators: These light while the IML pushbutton is held. During IML, they follow the test sequence. At completion, they all go out. During operation, they indicate operational status.
6	Primary/Secondary Speed Switch — In the Primary position, the modem operates at normal speed, in the Secondary position, the modem operates at half speed.
7	Encrypt/Decrypt Key Switch — Allows a new master key to be entered when in the horizontal position.
8	Encrypt/Decrypt Battery — Allows the master key to be maintained in the 3274 when power is off.

3274 Operator Panel — Model 51C with 1200-BPS Integrated Modem with:

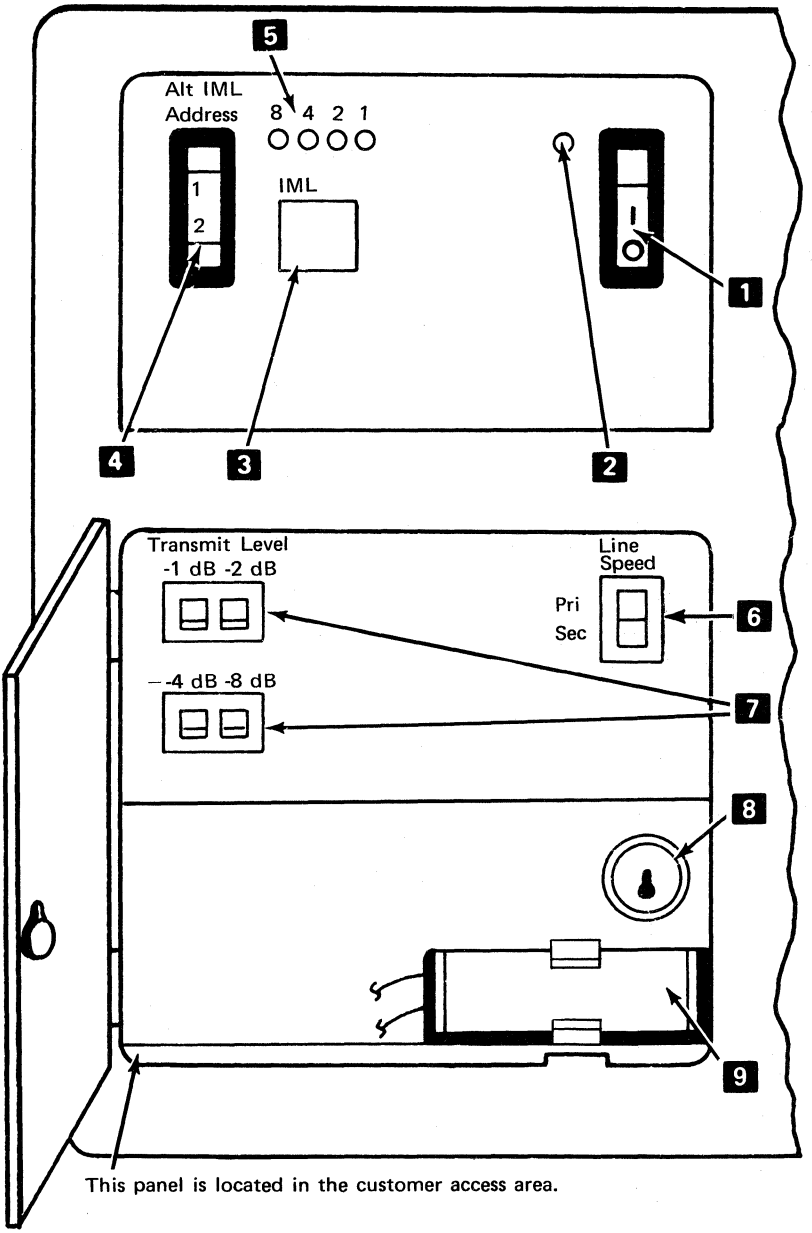
- Switched Line with Auto Answer Feature (No. 5501)
- Non-switched Line with Switched Network Backup (SNBU) and Auto Answer Feature (No. 5508)



Ref	Description
1	On/Off switch: [I] = On; [O] = Off.
2	On indicator: Indicates the 3274 is on.
3	IML (Initial Machine Load) pushbutton: Pressing and holding causes a basic test to run. When the pushbutton is released, IML tests start. At completion, the machine is loaded.
4	Alt IML Address switch: • 1: Holding, while pressing the IML pushbutton, bypasses the tests and loads the machine directly. Use only after normal IML fails. • 2: Holding, while pressing the IML pushbutton, invokes adapter and wrap tests.
5	8 4 2 1 indicators: These light while the IML pushbutton is held. During IML, they follow the test sequence. At completion, they all go out. During operation, they indicate operational status.
6	Talk/Data Switch • Talk Position — The operator may use the handset for voice communication. • Data Position — The handset is bypassed; only machine data is allowed on the communication line (switched network only).
7	Call In Progress Indicator: Indicates that a connection has been established (switched network only).
8	Primary/Secondary Speed Switch — In the Primary position, the modem operates at normal speed; in the Secondary position, the modem operates at half speed.
9	Transmit Level Attenuation Switches (switched network/U.S. and Canada only) — These four switches provide 0 to —15 dB attenuation of the transmit level in 1 dB increments.
10	Encrypt/Decrypt Key Switch — Allows a new master key to be entered when in the horizontal position.
11	Encrypt/Decrypt Battery — Allows the master key to be maintained in the 3274 when power is off.

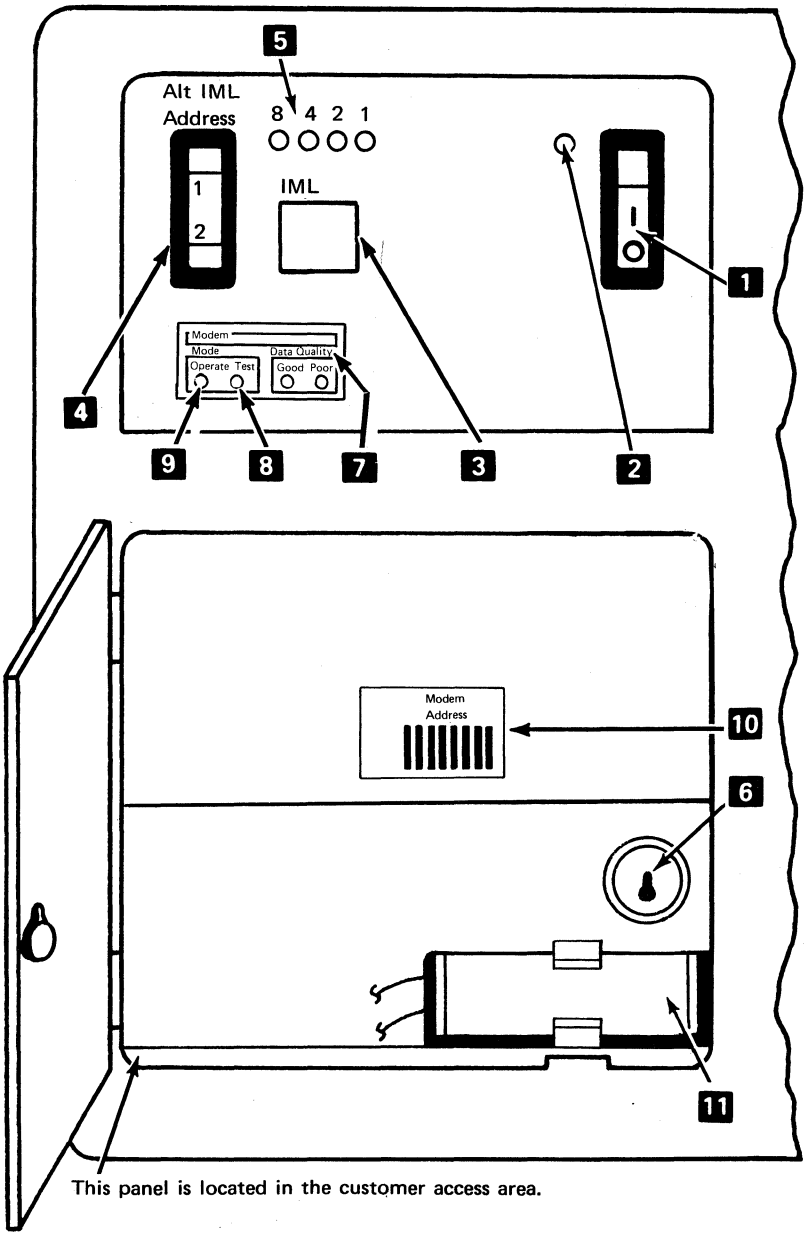
3274 Operator Panel – Model 51C with 1200 BPS Integrated Modem with:

- Switched Line with Manual Answer Feature (No. 5502)
- Non-Switched with SNBU and Manual Answer Feature (No. 5507)



Ref	Description
1	On/Off switch: ⎡⎤ = On, ⎣○⎦ = Off.
2	On indicator: Indicates the 3274 is on.
3	IML (Initial Machine Load) pushbutton: Pressing and holding causes a basic test to run. When the pushbutton is released, IML tests start. At completion, the machine is loaded.
4	Alt IML Address switch: • 1: Holding, while pressing the IML pushbutton, bypasses the tests and loads the machine directly. Use only after normal IML fails. • 2: Holding, while pressing the IML pushbutton, invokes adapter and wrap tests.
5	8 4 2 1 indicators: These light while the IML pushbutton is held. During IML, they follow the test sequence. At completion, they all go out. During operation, they indicate operational status.
6	Primary/Secondary Speed Switch — In the Primary position, the modem operates at normal speed; in the Secondary position, the modem operates at half speed.
7	Transmit Level Attenuation Switches (Switched Network only) — These four switches provide 0 to —15 dB attenuation of the transmit level in 1 dB increments.
8	Encrypt/Decrypt Key Switch — Allows a new master key to be entered when in the horizontal position.
9	Encrypt/Decrypt Battery — Allows the master key to be maintained in the 3274 when power is off.

3274 Operator Panel – Model 51C with Greater Than 1200 BPS Integrated Modem



This panel is located in the customer access area.

Ref	Description
1	On/Off switch: [I] =On; [O] = Off.
2	On indicator: Indicates the 3274 is on.
3	IML (Initial Machine Load) pushbutton: Pressing and holding causes a basic test to run. When the pushbutton is released, IML tests start. At completion, the machine is loaded.
4	Alt IML Address switch: • 1: Holding, while pressing the IML pushbutton bypasses the tests and loads the machine directly. Use only after normal IML fails. • 2: Holding, while pressing the IML pushbutton, invokes the adapter and wrap test. • 3: Pressing and holding will cause the modem self test to be initiated and repeated approximately every 4 seconds, until the switch is released.
5	8 4 2 1 indicators: These light while the IML pushbutton is held. During IML, they follow the test sequence. At completion, they all go out. During operation, they indicate operational status.
6	Encrypt/Decrypt Key Switch — Allows a new master key to be entered when in the horizontal position.
7	Data Quality: The Good and Poor indicators are used to indicate the following:

Good	Poor[1]	Meaning
ON	OFF	Data Received is good.
Flashing	OFF	Most data received is good.
OFF	ON	Most data received is not usable.
OFF	OFF	Data cannot be received.

[1] When running the self test by use of the ALT 2 switch, the Poor indicator should light if the self test is failing. The indicator turns off when the switch is released.

8	Test: Indicates that IML diagnostics or data link diagnostics are being performed.
9	Operate: Indicates that the integrated modem is ready for use.
10	Modem Address: Used for the Data Link Problem Determination Aids. It should be set to the binary equivalent of the SDLC or BSC control unit address.
11	Encrypt/Decrypt Battery: Enables the master key to be maintained in the 3274 when power is off.

Appendix C. Status Summary Display

You may run a concurrent test, that is, a test that can be run while the system is performing other work, to obtain statistics about your control unit and its attached devices.

You can start this test from the keyboard of any 3278 or 3279 display station attached to your 3274 Control Unit. Depending on your control unit, the test results will be displayed as shown under (1) or (2) below. Start the test as follows:

1. Press and hold the ALT key while pressing the TEST key.
2. Release the ALT and TEST keys.
3. Type in /3.
4. Press and release the ENTER key.

(1) The test results displayed are:

Port addresses configured on the control units.
Status of each device by port address.

Example:

```
012345678901234567890123   45678901
101111111001111111111111   11111011
0000 0001 0000 0000 0000
```

Where:

Line 1 = Low-order digit of the port addresses configured on the 3274. When a Type B adapter is attached, the last (highest) Type A port and the first (lowest) Type B port are separated by two blanks on lines 1 through 3. The above example shows 24 Type A devices and eight Type B devices.

Line 2 = Status of each device by port address, where:

- 1 = device is powered on
- 0 = device is recognized as powered off by the 3274
- - = device is disabled due to error

Line 3 = MMMM CCCC PPPP RRRR XXXX, where:

- MMMM = summary count of 3274-detected machine checks
- CCCC = summary count of communication checks
- PPPP = summary count of program checks
- RRRR = summary count of SDLC Test commands received
- XXXX = summary count of SDLC Test command successfully transmitted

② The test results displayed are:

Coax port addresses configured on the control unit.
Status of each device by port address.
Device type attached to each port.
Summary of coax errors for each port address.
Summary of device errors for each port address.
LU session information (SNA attachment only).
Information about the X.21 Switched feature (when installed).

Example:

```
012345678901234567890123  45678901
101111111001111111111111  11111011
dddddddddddddddddddddddd  pppppppp  TYP
.......|....:.........*.  ...:....  COAX
................:...|..  .....*..  DEV
+ +++++++  +++++++++++ +  ++++  ++  LU
                                   ##    ccc...(up to 32
                                                characters)

0000 0001 0000 0000 0000
```

Where:

Line 1 = Low-order digit of the port addresses configured on the 3274. When a Type B adapter is attached, the last (highest) Type A port and the first (lowest) Type B port are separated by two blanks on lines 1 through 6. The above example shows 24 Type A devices and eight Type B devices.

Line 2 = Status of each device by port address, where:

- 1 = device is powered on
- 0 = device is recognized as powered off by the 3274
- - = device is disabled due to error

Line 3 = "TYP" = Device type by port address, where:

- d = display
- p = printer
- i = other
- - = device was not initialized

Line 4 = "COAX" = Summary of possible coaxial cable errors by port address, where:

- . = no errors
- : = 1 to 9 errors
- | = 10 to 19 errors
- * = 20 or more errors

Line 5 = "DEV" = Summary of device errors by port address, where:

. = no errors
: = 1 to 9 errors
| = 10 to 19 errors
* = 20 or more errors

Line 6 = "LU" = Devices that have sessions bound, where:

+ = session bound
blank = no session bound

Note: *This entire line, including the label "LU", will be blank when operating in a non-SNA environment.*

Line 7 = Display of connection, where:

0000 = direct call
---- = incoming call
ccc. . . (Up to 32 characters) = number dialed by operator transmitted

Note: *This entire line, including the label "#", will be blank when the X.21 Switch feature is NOT installed.*

Line 8 = MMMM CCCC PPPP RRRR XXXX, where:

MMMM = summary count of 3274-detected machine checks
CCCC = summary count of communication checks
PPPP = summary count of program checks
RRRR = summary count of SDLC Test commands received
XXXX = summary count of SDLC Test commands successfully transmitted

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