XEROX

XEROX 6085 PCS Diagnostics Handbook

This publication supports Diagnostics levels 1.5.2, 2.0.1, 2.1, and 3.0.

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About This Handbook

This Xerox 6085 PCS Diagnostics Handbook is a tool to be used by Xerox Service Representatives and Systems Analysts. It contains descriptions of the diagnostic tests available on the 6085 PCS and instructions on how to run the tests.

This handbook is designed to contain all 6085 PCS diagnostic information required by Xerox Service Representatives and Systems Analysts. It is intended for Xerox Internal Use Only.

This handbook contains very few troubleshooting procedures and only a few examples of when to employ some of the diagnostic tests. Its intent is to instruct the user how to run any of the available diagnostic tests and to provide an explanation of the tests.

This handbook is divided into the following major areas of 6085 PCS Diagnostics:

● Descriptions and Messages of:

 - Pre-Boot Diagnostics
 - Boot Diagnostics
 - Off-Line Diagnostics
 - On-Line Diagnostics
 - 7650 Pro Imager Diagnostics
 ▌ - Cartridge Tape Diagnostics▐

- How to perform:

    - Off-Line Diagnostics
    - On-Line Diagnostics
    - 7650 Pro Imager Diagnostics
    - Cartridge Tape Diagnostics

- Appendices

- Glossary of terms and abbreviations

To help distinguish specific text references, the following writing conventions are used in this handbook:

- All references to actual screen messages are written in an *Italic Font*.

- Whenever input that a user must type in is mentioned, it is shown in boldface type. And when a keyboard key is mentioned, it is shown in bracketed, boldface type. For example, "Type **1** and press **< Return >**."

- Significant words or statements that merit being distinguished from regular text are in boldface type.

There are two types of revisions to the Diagnostics Handbook: Complete Reprints and Partial Reprint Packages. A Complete Reprint is identified by a new part number that ends in "0." A Partial Reprint Package is identified by the current part number incremented by one. (For example, the first revision to handbook 700P02610 will be numbered 700P02611, the

second revision will be numbered 700P02612, and so forth.)

A revision date (at the bottom center of the page) identifies a page that has been changed or added to the handbook. Areas that are new or changed are identified on each new revision page. The methods used to mark the changes on each page are:

- Text: black vertical bars surround the changed information.

- Changed or new figures and tables: black vertical bars surround the title name of the figure or table.

- If the same page is changed by a later revision, the revision issue date will be removed and a later one added to identify the new information.

- A new title page with a revision control list on it will be sent with each revision package. This list will contain the page number of each changed or added page along with the revision issue date of the page. Pages not listed are original pages.

You can assist with creating accurate service documents by identifying errors or improvements. That information can be sent to Service Education personnel on a Comment Sheet, provided on the last page of each handbook. The Comment Sheet provides instructions for completion.

Notes:

6085 Diagnostics Overview

The 6085 diagnostic tests are divided into the following categories:

- Pre-Boot Diagnostics

- Boot Diagnostics

- Off-Line Diagnostics

- On-Line Diagnostics

Before describing the different categories of the diagnostics, three key subjects and their functions in diagnostics must be understood: the processor front panel components, the Boot Softkeys and the Network Executive.

The Front Panel Components

- Power ON/OFF Switch - This switch turns power on and off to the system components. When it is switched to on, it also initiates the system boot sequence. The boot sequence always starts with Pre-Boot Diagnostics.

- B RESET Button - This button, the Boot/Reset Switch, resets the logic and boots the system in the same manner as when you switch power on.

- Pre-Boot Indicators - These three red LEDs indicate the Pre-Boot Diagnostic status.

The Boot Softkeys

In the normal boot sequence the Boot Softkeys appear on the display after Pre-Boot Diagnostics completes.

The softkeys are in positions on the display that correspond to the function keys on the keyboard. Only the softkeys for which the system is configured are shown on the display. For example, if the system is not configured for RS-232-C operation, then the softkeys for RS-232-C operations are shown as blank softkey positions and do not perform any function. Also, the softkey positions that correspond to Function Keys 4, 8, 9, and 10 are currently not used in normal operation and are presently blank on any system.

The Boot Softkeys appear on the display for 20 seconds. During this period, these "keys" may be selected by pressing the corresponding function key on the keyboard. If one of the Boot Softkeys is not selected during this time period, the system will boot the "default" boot device as established by the system configuration utility at install. The default boot device is the Boot Softkey that is already highlighted when the default boot device begins booting.

The first softkey is normally the default Boot Softkey. This means that the system

(application) software on the rigid drive of a 6085 PCS (Professional Computer System) will be booted automatically if a different function key is not selected within the first 20 seconds.

Selecting a function key on the keyboard· (corresponding to a Boot Softkey) represents a specific function as explained in Figure 1-1.
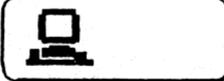
	<F1> - the system (application) software on the rigid of the 6085 PCS boots.
	<F2> - a software application or routine is loaded from a floppy (inserted in the floppy disk drive of the 6085 PCS).
	<F3> - the system boots the Network Executive menu from the Ethernet network.
	<F4> - (Currently not implemented.)
	<F5> - the Boot Diagnostics run from the rigid disk drive of the 6085 PCS. Pressing this key once runs the short boot diagnostics. Pressing this key twice runs the long boot diagnostics.
	<F6> - the Boot Diagnostics run from the Boot Diagnostics Floppy (inserted in the floppy disk drive of the 6085 PCS). Pressing this key once runs the short boot diagnostics. Pressing this key twice runs the long boot diagnostics.
	<F7> - the Boot Diagnostics run from the Ethernet. Pressing this key once runs a short boot. Pressing this key twice runs a long boot.
	<F8> - (Currently not implemented.) **<F9>** - (Currently not implemented.) **<F10>** - (Currently not implemented.)
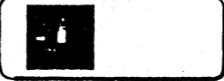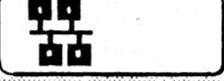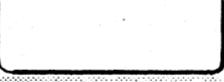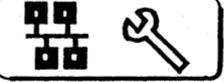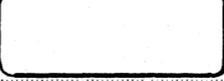
Figure 1-1 6085 Boot Softkeys

The Network Executive

To boot diagnostics from the network, reboot the system. When the Boot Softkeys appear on the display, press the **<F3>** function key. The system boots the Network Executive menu:

Choices available:

1 Help

2 Installer

3 Offline Diagnostics and Utilities

Enter choice number, then press RETURN: 1

Option 1, Help, explains how to use the Network Executive. A sample is shown in Figure 1-2.

This is a network executive utility which allows you to boot other utility programs over the network. Enter the number corresponding to the program you wish to boot, followed by a Carriage Return. Booting of your selected program will begin immediately and booting progress will be reflected through maintenance codes.

Choices available:
1 Help
2 Installer
3 Offline Diagnostics and Utilities
Enter choice number, then press RETURN: 1

Figure 1-2 Network Executive Help Window

Option 2, Installer, is the software installation utility, which is covered in Procedure 6.15, *Software Installation From the Network,* in the 6085 Product Support Manual.

Option 3, Offline Diagnostics and Utilities, provides you with the same tests as on the Off-Line Diagnostics floppy disks. Refer to Chapter 4, Off-Line Diagnostics, for complete descriptions of these utility programs.

Pre-Boot Diagnostics are designed to perform a series of sequential tests to verify the components needed to initiate the booting sequence. Pre-Boot Diagnostics are contained in two Programmable Read Only Memory (PROM) chips on the IOP PWB and are automatically initiated when system power is switched on or when the B RESET button is pressed.

The Pre-Boot Diagnostics perform a series of sequential tests that are indicated by the three red LEDs on the front of the processor unit. These LEDs are the Pre-Boot Indicators. At the beginning of the Pre-Boot Diagnostics sequence, all three pre-boot indicators will be on briefly to test the ability of the LEDs to light. The Pre-Boot Diagnostic Test sequence is shown in the indicators in Table 2-1 from the top (all LEDs on) down. The Pre-Boot Indicators cycle through a sequence of on and off combinations during the Pre-Boot Diagnostics. When successful, the Pre-Boot Diagnostics complete in 5 seconds and end with all of the Pre-Boot Indicators off.

The Pre-Boot Diagnostics sequence stops when a test fails. The system emits a short beep tone, and the Pre-Boot Indicators stop at the specific on and off combination that represents the test that failed.

The majority of the Pre-Boot tests are for components on the IOP PWB. The IOP PWB and the Keyboard are the only replaceable parts if there is a failure during Pre-Boot Diagnostics. The status of the Pre-Boot

Indicators and the corresponding replacement part(s) for the various Pre-Boot test failures are listed in Table 2-1. (Refer to Chapter 4 of the Xerox 6085 PCS Product Support Manual for replacement procedures.)

Table 2-1 Pre-Boot Failure Indicators / Repair Analysis	
Indicators*	**Component(s) to replace**
■ ■ ■	(Not a failure status)
■ ■ □	IOP (4.12)
■ □ ■	IOP (4.12)
■ □ □	Keyboard, IOP (4.12)
□ ■ ■	Keyboard, IOP (4.12)
□ ■ □	IOP (4.12)
□ □ ■	IOP, Host ID PROM (4.12)
* ■ = Indicator On, □ = Indicator Off	

3.   BOOT DIAGNOSTICS

■After the Pre-Boot Diagnostics has completed and the boot softkeys are displayed, the Boot Diagnostics can be performed. The Boot Diagnostics can be selected, via the System Configuration Utility, to perform separately or to perform automatically before the system software is booted.

The Boot Diagnostics tests all hardware required to load and operate the software. There are two versions of the Boot Diagnostics. The short and long versions are described later in this section. Both versions of the program validate the major electronic portions of the processor. The PWBs tested are the backplane, the IOP or IOP-2, the DCM or DCM-2, the MPB or MPB-2, and, when installed, the MEB, the PCO or PCX, the LPO or the SPO.■

The Boot Diagnostics checks the configuration of the processor. The configuration is referred to in later diagnostic tests to determine which tests to select. Also, the program checks for the presence and/or size of the following devices:

- Memory
- ■• Rigid disk drive (10MB, 20MB, 40MB, 80MB, 100 MB, or 190 MB)■
- Floppy disk drive
- PCO or PCX PWB
- LPO or SPO PWB

The Pre-Boot and Boot Diagnostics do not perform comprehensive tests on the peripheral devices. To test these components, the Extended Isolation Boot Diagnostics, On-Line Diagnostics, and/or Off-Line Diagnostics must be executed.

∎Press function keys F5 through F7 to load and perform the Boot Diagnostics from the rigid disk drive (<F5>), floppy disk drive (<F6>), or Ethernet (<F7>). The recommended source for the Boot Diagnostics, when run by the Service Representative, is the floppy disk drive.

As the Boot Diagnostics cycles through various tests, the test numbers are shown in the Cursor Box at the top center of the display. Some tests are so brief that they flash too quickly to be observed. Press <M> to move the cursor to the bottom center of the display, if desired.

When the Boot Diagnostics completes successfully, the softkeys are displayed. If the system fails a test during Boot Diagnostics, the tests stop at that test number. The Cursor Box then alternates with two sets of numbers. The numbers, called Error Codes, indicate the test that failed and the type of error that was encountered.

When the Boot Diagnostics stops on an Error Code, there is a built-in system for reporting the replacement components and maintenance procedures for that Error Code. Press <R> (for "repair") after the Boot Diagnostics stops on an Error Code to display four numbers and/or letters. This new code is called a **Repair Code**.

Each number and/or letter in the Repair Code represents a component to replace or a maintenance procedure to perform to repair that specific Error Code. Press the <Space Bar> to change the Repair Code back to the Error Code when it is needed for reference or higher level troubleshooting purposes. The Repair Codes provide sufficient information for most field service requirements.∎

∎There are two versions of the Boot Diagnostics:

- The Short Boot Diagnostics are normally used by the customer for routine checks.

- The Long Boot Diagnostics are used by the Service Representative during System Checks when problems are suspected.

Table 3-1 shows the execution times of Boot Diagnostics when run on a 6085 PCS with 1.1MB of memory from the specified devices Units are shown as minutes:seconds (± one second).

Table 3-1A shows similar data for the Boot Diagnostics run on a 6085-2 PCS with 4MB o memory.∎

∎Table 3-1   Boot Diagnostics Execution Times (6085 PCS)∎

Boot Source	Short Version	Long Version
Floppy Drive	2:27	7:59
Rigid Drive	1.46	5:40
Ethernet	2:20*	6:26*

∎Table 3-1A   Boot Diagnostics Execution Times (6085-2 PCS)

Boot Source	Short Version	Long Version
Floppy Drive	4:16	19:03
Rigid Drive	3:35	15:21
Ethernet	*	*

*Varies with network activity

∎The Long Boot Diagnostics differ from the short version in the following ways:

- More extensive memory tests are performed

- Additional components and peripherals are tested

The available tests are shown below.∎

- **Short Boot Diagnostics Tests**

    - Tests A400-A409, A40A (booting the hardware and Control Store tests)
    - Tests B500-B507 (Central Processor tests)
    - Tests CA00-CA04, CA0A, CA10-CA12, CA14 (short memory test sequence)
    - Test 0D00-0D06 (internal Ethernet tests)

- **Long Boot Diagnostics Tests**

    - Tests A400-A409, A40A (booting the hardware and Control Store tests)
    - Tests B500-B507 (Central Processor tests)
    - Tests CA00-CA05, CA07, CA0A, CA0D-CA0F, CA10-CA14 (long memory test sequence)
    - Test 0D00-0D06 (internal Ethernet tests)
    - Tests 0E00-0E01 (Floppy tests)
    - Test 0F00 (RS232C test)
    - Tests 1C00-1C0A (PC Emulation tests), or
    - Tests 1F00-1F0E (PC eXtension tests)
    - Tests 1B00-1B01 (Rigid Disk tests)
    - Test 1D00 (LPO test; LPO file)
    - Test 1A00 (System test)
    - Test 1E00 (SPO test; parallel port option file)

1C01-1C0B. Otherwise, Long Boot Diagnostics will continue to the next peripheral (test 1D00, Printer).

> *NOTE: If either a printer or a scanner is connected to the 6085, the printer or scanner power must be on to successfully execute the Long Boot Diagnostics.*

Besides the automatic tests all of the Boot Diagnostics programs also have Extended Isolation (EI) Tests that can be loaded and executed separately. Through various "key-commands," these EI Tests provide additional or more extensive diagnostic routines. This ability to execute individual tests (repetitively, if desired) enables more extensive or specific subsystem troubleshooting.

All the inputs to the Boot Diagnostics are via the keyboard through the key-commands. The following keys are active whenever Boot Diagnostics is running a test or when it has stopped on an error. The keys are not active when a Boot Diagnostics test is being loaded. The **LOCK** LED is lit and the cursor has a white background when Boot Diagnostics are being loaded.

> < STOP > - stops the testing, allowing the user to select what to do next.

> < SKIP/NEXT > - skips to the next test in a test sequence.

<Space Bar> – returns to the Error Code if you are at a Repair Code, or changes the Repair Code to a Bank Indicator Code. If pressed again, it changes the Bank Indicator Code to a set of Chip Location Codes.

<L> – loops on the current test for executing the same test repetitively.

<N>– loops on the current test sequence.

<O> – exits the error loop after displaying each error once.

<R> – changes the Error Code to a Repair Code.

■ **<Y>** – loops the entire Short or Long Boot Diagnostics. If Boot Diagnostics is loaded from a floppy, the floppy must remain in the drive. ■

When the Boot Diagnostics has been stopped and the Cursor Code is at [XX99], the following keys are active:

<F> – sets or resets for a Boot Diagnostics file input. The Cursor Code will "spin" (flash through numbers rapidly) until a Boot Diagnostics file input is entered. (The various Boot Diagnostics file inputs are listed in Table 3-2.)

<S> – specifies the test option. This key is usually typed after **<F>** to specify a particular set of tests within a Boot Diagnostics file category. (The various sets of tests are listed in Table 3-2.)

<I> – re-executes the test sequence currently in the system memory.

The general procedures for using these Boot Diagnostics key-commands are as follows:

1. Press <STOP> when the Boot Diagnostics is running a test. (Boot Diagnostics are running when the cursor is in the middle of the screen, on a dark background.)

2. Press <F> from the Cursor Code [XX99].

3. Press the key for the appropriate test category.

4. From the Cursor Code [XX99], press <S> to specify the test option.

5. Press the key for the appropriate test option.

6. Press <Return> to begin the test.

7. Press <I> if the same test is to be repeated, to re-execute the test currently in memory.

Table 3-2   Boot Diagnostics EI Tests/Options

Test			Option
Name			Description
Control Store	C	0	Selects all Control Store tests
Central Processor	P	0	Selects all Central Processor tests
Memory	M	0	Short Memory Test
		1	Long Memory Test
		2	Complete Memory Test
		4	IOP - only Memory Data Test
		5	IOP - only Memory Address Test
		6	IOP - only Memory Bank Test
Rigid Disk	D	0	Non-Destructive FIFO Test
		4	Non-Destructive Test on Cylinder 0 and Diagnostic Cylinder
		5	Non-Destructive Safe Landing Zone
			(The following will destroy the rigid disk.)
		E	Destructive Short Test on Diagnostic Cylinder
		F	Destructive Long Test on all cylinders
Ethernet	E	0	Internal Ethernet Test
		2	External Ethernet Test
PC Emulation	U	0	All PCO Tests (one at a time)

Table 3-2   Boot Diagnostics EI Tests/Options (Continued)

Test			Option
Name			Description
PC eXtension	X	0	**All internal PCX tests** (Companion 386 must be connected and have the system power on)
		7	**Serial Controller External Loopback Test** (Companion 386 must be connected and have the system power on, or the Tether Card Loopback tool must be attached to the PCX PWB)
		9	**Internal signals tests** (Companion 386 must be disconnected at the PCX PWB Comm Connector)
Floppy	F	0	**Non-Destructive Test**
		8	**Destructive Test on first 7 cylinders** (Does not Format)
		F	**Destructive Test on all cylinders** (Formats, Writes, and Reads)
System	S	0	**Mesa Processor Test**
		4	**Display VI, Floppy, RS232C, Ethernet, Mesa Processor Test** (This test will destroy data on the floppy disk. You must install a floppy disk formatted during the following test (F) and connect an RS232C cable as a loopback cable between the DTE and DCE Ports.)
		F	**Floppy Test** **Format, Write, Read on Cylinder 0** (This test will destroy data on the floppy disk. Install a scratch floppy disk and connect an RS232C cable as a loopback cable between the DTE and DCE Ports.)

Table 3-2   Boot Diagnostics EI Tests/Options (Continued)

Test			Option
Name			Description
'rinter	J	0	**Maintenance Test** (Printer need not be connected)
		4	**Printer Test** (Printer must be connected)
₨232C	R		(Connect an RS232C Cable as a loopback cable between the DTE and DCE Ports for the following three tests)
		0	**All RS232C Test**
		1	**Asynchronous Test**
		2	**SDLC Test**
		3	**All RS232C Test** (Connect the Universal Loopback Tool to the DTE Port)
		5	**All RS232C Test** (Connect the Universal Loopback Tool to the DCE Port)
;canner/Printer	O	2	**Print-Out on Printer Port, word mode.** (The Printer must be connected to the Printer Port.)
		6	**SPO data register loopback test.** (For SPO PWBs only. The Scanner/Printer connection is not required for this test.)
		9	**Initialize WS Communication test.** (The Scanner must be connected to the Scanner Port.)

Performing the Boot Diagnostics

After resetting the machine by pressing the B RESET button, three special softkeys are displayed on the screen. They are used to determine from which device the diagnostics will be executed.

- Rigid Disk - press <F5>
- Floppy Disk - press <F6>
- Ethernet - press <F7>

NOTE: To execute Boot Diagnostics from floppy disk, insert the diagnostics floppy disk labeled "Boot Diagnostics" into the Floppy Disk Drive and press <F6>.

NOTE: The system configuration determines the softkeys that will appear on the display. If a device is installed on the workstation (for example, a workstation with a floppy disk drive), but the system is not configured with a floppy disk drive, the boot softkey for that device will be blank.

NOTE: If a device is defective, diagnostics probably cannot be loaded. Try loading from another diagnostic softkey to verify that the diagnostics are operational.

Short Boot Diagnostics

To execute the short version of Boot Diagnostics:

1. Press B RESET on the processor front panel.
2. Press the function key (<F5> from the rigid disk, <F6> from the floppy disk or <F7> from the network) corresponding to the desired test you wish to execute.

NOTE: To execute Boot Diagnostics from floppy disk, insert the diagnostics floppy disk labeled "Boot Diagnostics" into the Floppy Disk Drive and press <F6>.

Long Boot Diagnostics

To execute the long version of Boot Diagnostics:

1. Press B RESET on the processor front panel.
2. Press the function key (<F5> from the rigid disk, <F6> from the floppy disk or <F7> from the network) corresponding to the desired test you wish to execute, **twice rapidly**.

NOTE: To execute Boot Diagnostics from floppy disk, insert the diagnostics floppy disk labeled "Boot Diagnostics" into the Floppy Disk Drive and press <F6>.

The cursor codes for the Boot Diagnostics always contain one or more letters from A to F. Letters are unique to Boot Diagnostics cursor codes only.

While the Boot Diagnostics are operating, the display is normally black. However, during memory tests, the screen displays a variety of special patterns.

Each test has an identifier that contains at least one letter. If test Ax (x can be any number) completes successfully, it continues to test Bx, then Cx, and so forth.

If a test fails, the Boot Diagnostics terminate and no additional tests are executed.

Successful completion of the Boot Diagnostics is indicated differently, depending on how the Boot Diagnostics were performed.

- If the Boot Diagnostics are started by selecting one of the special softkeys, successful completion is indicated by the appearance of the boot softkeys. Normal system booting can then be performed.

- If Boot Diagnostics are performed automatically, successful completion is indicated when the bouncing keyboard appears.

- If individual tests of Boot Diagnostics are performed, successful completion is indicated by a [xx99] cursor code.

Notes:

Boot Diagnostics Cursor Codes

The following list provides a description of the individual cursor codes. It contains very few troubleshooting or recovery action procedures.

The terms contained within this list are used by the developers, and are not intended to be fully understood by Service Representatives or Systems Analysts. This list should be considered as additional reference material.

∎*NOTE: Repair Analysis Procedures can be found in Section 2 of the Xerox 6085 PCS Service Manual.*∎

Code	Description
0D00	Ethernet, 1 Pass, 1A Set up.
0D01	Ethernet, 1 Pass, Configure, Dump Command.
0D02	Ethernet, 1 Pass, Transmit with Receive.
0D03	Ethernet, 1 Pass, Transmit without Receive.
0D04	Ethernet, 1 Pass, Transmit with Receive, interface loopback.
0D05	Ethernet, 1 Pass, Transmit without Receive, interface loopback.
0D06	Ethernet, 1 Pass, Diagnose command.
0D07	Ethernet, 1 Pass, 1A Set-up.
0D08	Ethernet, 1 Pass, Configure, Dump command.
0D09	Ethernet, 1 Pass, Transmit with Receive.
0D0A	Ethernet, 1 Pass, Transmit without Receive.
0D0B	Ethernet, 1 Pass, Transmit with Receive, interface loopback.
0D0C	Ethernet, 1 Pass, Transmit without Receive.

0D0D	Ethernet, 1 Pass, Transmit with Receive (connect to net or loopback cable).
0D0E	Ethernet, 1 Pass, Transmit without Receive (connect to net or loopback cable).
0D0E	Ethernet, 1 Pass, All test, Net loopback (connect to net or loopback cable).
0D0F	Ethernet, 1 Pass, Diagnose command.
0E00	Floppy, 1 Pass, FDC No Connection Test.
0E01	Floppy, 1 Pass, Recalibrate.
0E02	Floppy, 1 Pass, Read ID.
0E03	Floppy, 1 Pass, Write.
0E04	Floppy, 1 Pass, Read.
0E05	Floppy, 1 Pass, Write deleted data.
0E06	Floppy, 1 Pass, Read deleted data.
0E07	Floppy, 1 Pass, FDC No Connection Test.
0E08	Floppy, 1 Pass, Recalibrate.
0E09	Floppy, 1 Pass, Format.
0E0A	Floppy, 1 Pass, Write.
0E0B	Floppy, 1 Pass, Read.
0F00	RS232C, 1 Pass, Async, Polling (connect loopback cable).
0F01	RS232C, 1 Pass, Async, Polling (connect loopback cable).
0F02	RS232C, 1 Pass, Async, Polling (connect loopback cable).
0F03	RS232C, 1 Pass, Async, Polling (connect loopback cable).
0F04	RS232C, 1 Pass, Async, Polling (connect loopback cable).
0F05	RS232C, 1 Pass, Async, Polling (connect loopback cable).
0F06	RS232C, 1 Pass, Async, Interrupts (connect loopback cable).
0F07	RS232C, 1 Pass, SDLC, Interrupts (connect loopback cable).

0F08	RS232C, 1 Pass, SDLC, Interrupts (connect loopback cable).
0F09	RS232C, 1 Pass, SDLC, Interrupts (connect loopback cable).
1A00	System, CP.
1A01	System, Display VI, Floppy, RS232, Ethernet.
1A02	System, CP.
1A03	System, Display VI, Floppy, RS232, Ethernet, CP.
1A04	System, Display VI, Floppy, RS232, Ethernet, CP.
1A05	System, Display VI, Floppy, Ethernet, CP.
1A06	System, Floppy, CP.
1A07	System, Format Floppy.
1B00	Disk, FIFO Test.
1B01	Disk, Non-Destructive Disk Test.
1B02	Disk, Format Read Check.
1B03	Disk, Write, Read Log.
1B04	Disk, Full Format, Write, Read Log.
1B05	Disk, Seek Read Headers on Cylinder 0.
1B06	Disk, Seek Read Headers on Diagnostic Cylinder.
1B07	Disk, Seek Safe Landing Zone.
▌1C00	PCO Test. (System Configuration check.)
1C01	PCO Test: I/O Trapper Test
1C02	PCO Test: Memory Pattern Test
1C03	PCO Test: Memory Address Test
1C04	PCO Test: Memory Bank Test
1C05	PCO Test: Display Trapper Test
1C06	PCO Test: PCE Programmable Interrupt Controller (PIC) Test▌

∎ 1C07	PCO Test: PCE Programmable Interval Timer (PIT) Test
1C08	PCO Test: Speaker Port Test
1C09	PCO Test: Upper Chip Select (UCS) Test
1C0A	PCO Test: Run All Tests ∎
1D00	Maintenance Mode Byte Test. (System Configuration check.)
1D01	Maintenance Mode Word Test.
1D02	Printer Word Test.
1D03	Printer Byte Test.
1D04	Fault Interrupt Test.
1E00	LPO Maintenance register word loopback test. (System Configuration check.)
1E01	LPO Maintenance register word loopback test.
1E02	LPO/SPO Print-Out on Printer Port, word mode test.
1E03	LPO/SPO Print-Out on Printer Port, byte mode test.
1E04	LPO Fault Interrupt test.
1E05	SPO Print-Out on Scanner Port, word mode test.
1E06	SPO Print-Out on Scanner Port, byte mode test.
1E07	SPO Printer Port hard reset test.
1E08	SPO Data register word loopback test.
1E09	PPO Fault Interrupt test for SPO.
1E0A	SPO Scanner Port hard reset test.
1E0B	SPO Initialize - WS-Communication test.
∎ 1F00	PCX Test: PCX186/Mailbox Test
1F01	PCX Test: Trap Registers and DspSwRtn Test
1F02	PCX Test: Memory Pattern Test
1F03	PCX Test: Memory Address Test
1F04	PCX Test: Memory Bank Test ∎

▮1F05	PCX Test: Peripheral Interrupt Controller (PIC) Test
1F06	PCX Test: Keyboard Driver Self Test
1F07	PCX Test: Keyboard Driver Echo Test
1F08	PCX Test: Serial Controller Internal Loopback Test (using polling)
1F09	PCX Test: Serial Controller Internal Loopback Test (using interrupts)
1F0A	PCX Test: Serial Controller Internal Loopback Test (using DMA and interrupts)
1F0B	PCX Test: Timer 2 Test
1F0C	PCX Test: Serial Controller Break/Parity Test
1F0D	PCX Test: Serial Controller Overrun Test
1F0E	PCX Test: Serial Controller Channel B Internal Loopback Test (using polling) ▮
A400	Boot File, Daybreak Display Vertical Event Interrupt.
A401	Boot File, Daybreak IOP/PCO Map Reg Test.
A402	Boot File, Daybreak Host Prom Test.
A403	Boot File, Daisy Shift Reg Test.
A404	Boot File, Dove CS, Constant data (0000) Test.
A405	Boot File, Dove CS, Constant data (FFFF) Test.
A406	Boot File, Dove CS, Constant data (AAAA) Test.
A407	Boot File, Dove CS, Constant data (5555) Test.
A408	Boot File, Dove CS, Address data Test.
A409	Boot File, Dove CS, Random data Test.
A40A	Boot File, Dove CS, Bank Test.
B500	Boot File, Daybreak CP, MoonBus or Daisy CP, Moonrise 1.
B501	Boot File, Daybreak CP, MoonSun or Daisy CP, Moonrise1.
B502	Boot File, Daybreak CP, MoonSun or Daisy CP, Moonrise2.

B503	Boot File, Daybreak CP, MoonSun3 or Daisy CP, Moonrise3.
B504	Boot File, Daybreak CP, MoonSun4 or Daisy CP, Moonrise4.
B505	Boot File, Daybreak CP, MoonSun or Daisy CP, Moonrise5.
B506	Boot File, Daybreak CP, Real Time Clock or Daisy CP, Moonrise6.
B507	Boot File, Daybreak CP, Memory Interface, MoonMR or Daisy CP, Memory Interface, Moonrise7.
B602	Boot File, Daisy CP, Moonrise2.
B603	Boot File, Daisy CP, Moonrise3.
B704	Boot File, Daisy CP, Moonrise4.
B705	Boot File, Daisy CP, Moonrise5.
B800	Boot File, Daybreak CP, MoonBus.
B801	Boot File, Daybreak CP, MoonSun1.
B802	Boot File, Daybreak CP, MoonSun2.
B903	Boot File, Daybreak CP, MoonSun3.
B904	Boot File, Daybreak CP, MoonSun4.
B905	Boot File, Daybreak CP, MoonSun5.
BB06	Boot File, Daybreak CP, Real Time Clock, MoonTime.
BB07	Boot File, Daybreak CP, Memory Interface, MoonMR.
BC06	Boot File, Daisy CP, Moonrise6.
BC07	Boot File, Daisy CP, Memory Interface, Moonrise7.
CA00	Memory, 1 Pass Block Data = 0000, Display Off, CP, Write only, ignore Parity Error.
CA01	Memory, 1 Pass Block Data = 0000, Display On, CP.
CA02	Memory, 1 Pass Block Data = FFFF, Display On, CP.
CA03	Memory, 1 Pass Block Data = AAAA, Display On, CP.
CA04	Memory, 1 Pass Block Data = 5555, Display On, CP.

CA05	Memory, 1 Pass Block Data = AAAA, Display On, IOP.
CA06	Memory, 1 Pass Block Data = 5555, Display On, IOP.
CA07	Memory, 128 Passes Inc Block Data = AAAA, Display On, CP.
CA08	Memory, 4 Passes Address Test, Display On, CP.
CA09	Memory, 1 Pass Address Test, Display On, IOP.
CA0A	Memory, 4 Passes Address Test, Display On, IOP and CP.
CA0B	Memory, 2 Passes Bank Test, Display On, CP.
CA0C	Memory, 1 Pass Bank Test, Display On, IOP.
CA0D	Memory, 2 Passes Address Test, Display On, IOP and CP.
CA0E	Memory, 128 Passes Random Data = ABCD, Display On, CP.
CA0F	Memory, 2 Passes Random Data = ABCD, Display On, IOP and CP.
CA10	Memory, 128 Passes Random Data = 1234, Display On, CP.
CA11	Memory, 5 Passes Map Inc Data Type Inc Data = DCBA, Display On, CP.
CA12	Memory, 1 Pass Map Read only Data = E0BE, Display On, IOP.
CA13	Memory, 5 Passes Map Inc Data Type Inc Data = 4321, Display On, IOP and CP.
CA14	Memory, 1 Pass Memory Size, Display Off, IOP and CP.

Notes:

There are currently five Off-Line Diagnostics for the Workstation, and they are for use with the Rigid Disk Drive, the Floppy Disk Drive, the Keyboard, Mouse and Display, and the Ethernet. They are: the Keyboard, Display and Mouse Diagnostics, the Ethernet Tests, the Floppy Disk Tests, the Rigid Disk Diagnostics, and the Rigid Disk Utilities. Each can be run from either floppy disk or from the network.

All Off-Line Diagnostics use a menu-driven user interface which requires minimum typing by the user. Explanations are provided at all selection points when you type **<?>** .

Different test selections with various capabilities are provided for the User (customer), the System Administrator, and Technical Support (CSR, Systems Analyst, etc.). Although the User level of Off-Line Diagnostics are thorough, they avoid the destructive tools.

▌*NOTE: For information about the Scanner Off-Line Diagnostics, refer to Chapter 9, 7650 Pro Imager Diagnostics. For information about the Cartridge Tape Off-Line Diagnostics, refer to Chapter 10, Cartridge Tape Diagnostics.* ▌

The System Administrator and Technical Support levels require passwords to use their respective tools.

Available Selections
  1 - Ethernet Tests
  2 - Floppy Disk Tests
  3 - Floppy Disk Utility
  4 - Formatter, Scavenger and Bad Page Utility
  5 - Rigid Disk Tests

6 - Keyboard/Display/Mouse/Beeper Tests
7 - System Configuration Utility
Please enter selection:

The Diagnostic Window contains three sections. The top section contains your test selections. The middle section provides messages while a particular test is running. The bottom section displays the results or status of the test. If a particular test has no results, you will not see the bottom section. Also, if the status section fills with information, it scrolls a line at a time, adding the new information at the bottom and deleting the top line's status information.

Figure 4-1 shows a sample Diagnostic Window.

Offline Diagnostics Version X.X Copyright (c) Xerox Corporation 1985, 1986 All rights
Running Rigid Disk Tests Selection: Confidence Test

Passes to run: 1
Run time: 2 mins 50 secs

= =
Error detected

= =
Page: 1500   Cylinder: 17   Head: 2   Sector: 8   Tries: 10   Failures: 10
Page: 1560   Cylinder: 18   Head: 0   Sector: 10   Tries: 10   Failures: 10
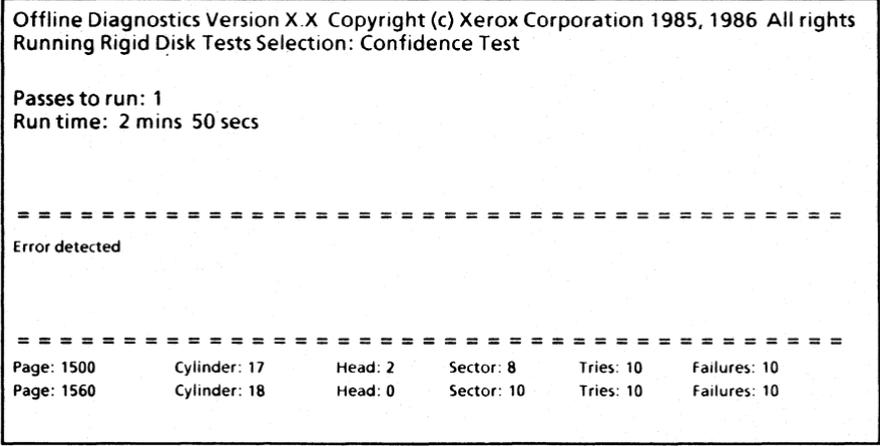
Figure 4-1   Diagnostic Window

Floppy Disk Tests

The Normal User level of Floppy Disk Tests are similar to the On-Line Diagnostics Floppy Operations.

Offline Floppy Diagnostics
1 - Clean Floppy Heads
2 - Standard test (Use floppy diskette labeled 'Workstation Diagnostics')
3 - Display Floppy Error Log
4 - Go To Previous Menu
Please enter selection:

The System Administrator and Technical Support levels of Floppy Disk Tests include two additional options.

Offline Floppy Diagnostics
1 - Format the diskette as Pilot file system
2 - Clean Floppy Heads
3 - Standard test (Use floppy diskette labeled 'Workstation Diagnostics')
4 - Exerciser test (Destructive - use scratch diskette)
5 - Display Floppy Error Log
6 - Go To Previous Menu
Please enter selection:

Format the diskette as Pilot file system

This is a utility that formats a floppy diskette with the standard Xerox format. This utility is the same as "Format Diskette" in the On-Line Diagnostics tests. Formatting destroys the contents of the diskette.

Clean Floppy Heads

Clean Floppy Heads is an operational maintenance utility that is used to assure the functional integrity of the floppy disk drive. A special head cleaning diskette must be used. The middle section of the diagnostic window provides self-explanatory messages for using this utility.

Standard test

█The Floppy Standard Test is a non-destructive test of the floppy disk drive and requires the 6085 diagnostic floppy diskette labeled 'Workstation Diagnostics'. The test is designed to begin with no diskette in the drive. The user will be requested to insert the diskette when appropriate and confirm that he/she has inserted the diskette. If an incorrect diagnostic disk is used or an irrecoverable error condition exists, the message *"Please insert floppy diskette labeled 'Workstation Diagnostics'. Note: Any other diskette will cause the diagnostic (last) cylinder to be OVERWRITTEN."* is displayed in the diagnostic window. █

Exerciser test

Floppy Exerciser is a utility that performs a destructive diagnostic test. This test destroys the contents of the diskette. Be sure to use a scratch diskette.

When the test is completed, an error log (Floppy Error Log) is displayed summarizing the test results.

Display Floppy Error Log

Display Floppy Error Log displays the results of the most recent execution of the Floppy Standard Test. It is shown as a matrix of the number and type of test/exercise commands executed, with the statuses that occurred for each command executed.

Floppy Disk Utility

The Floppy Disk Utility provides a facility to make copies of disks and/or calculate the checksums for disks.

Floppy Duplication And Verification Facility
  1 - Diskette Copy and Checksum Utility
  2 - Go To Previous Menu
Please enter selection:

When the user selects Option 1, Diskette Copy and Checksum Utility, he/she is asked to specify the action they wish to take:

Please specify action [1-Read Master 2-Make Copy 3-Calculate Checksum 4-Quit].

- Read Master– reads the master to a file. A master must be read before "Make Copy" can be executed.
- Make Copy–Copies the master to disk, verifies the new disk, and calculates the checksum for the new disk.
- Calculate Checksum–reads the disk and calculates its checksum.

Keyboard/Display/Mouse/Beeper Tests

The Keyboard/Display/Mouse/Beeper Tests allow the user to check the operation of the display and keyboard/mouse.

This set of tests have display tests with a cross-hair pattern and various patterns that enable the user to check the alignment and clarity of the display. The Keyboard, Mouse and Beeper Test allows the user to verify the operation of the keyboard and mouse.

▮ *NOTE: The Display X-Y Alignment test is not supported at this time.* ▮

The User Test Selections are:

Keyboard, Display, Mouse and Beeper Diagnostics
  1 Keyboard, Mouse and Beeper Tests
  2 Fill Screen With H, E, @, OR Slanted Lines
  3 Cross-Hair Pattern
▮ 4   Display X-Y Alignment
  5 Go To Previous Menu ▮
Please enter selection:

Using the appropriate password, the System Administrator Test Selections are:

Keyboard, Display, Mouse and Beeper Diagnostics
  1 Keyboard, Mouse and Beeper Tests
  2 Fill Screen With H, E, @, OR Slanted Lines
  3 Cross-Hair Pattern
▮ 4   Display X-Y Alignment
  5 Go To Previous Menu ▮
Please enter selection:

When the appropriate password for field service support is used, the Keyboard, Display and Mouse Diagnostics has additional test selections:

Keyboard, Display, Mouse and Beeper Diagnostics
1 Keyboard, Mouse and Beeper Tests
2 Borders And Data Field
3 Vertical and Horizontal Bars
4 Cross-Hair Pattern
5 Fill Screen With H, E, @, OR Slanted Lines
▌ 6   Display X-Y Alignment
7 Go To Previous Menu ▌
Please enter selection:

If the "Go to previous menu" option is selected or < STOP > is pressed, the program returns to the previous menu.

Ethernet Tests

The Ethernet Tests allow the user to check the operation of the network.

The User Test Selections are:

Offline Ethernet Diagnostic
1 Echo Test
2 Go To Previous Menu
Please enter selection:

Using the appropriate password, the System Administrator Test Selections are:

Offline Ethernet Diagnostic
1 Echo Test
2 Interface Test
3 Go To Previous Menu
Please enter selection:

Using the appropriate password, the Technical Support Test Selections are:

Offline Ethernet Diagnostic
1 Echo Test
2 Interface Test
3 Ethernet Datalink LSI Diagnostic
4 Ethernet Internal Loopback Test
5 Communication Turnaround Test
6 Go To Previous Menu
Please enter selection:

Echo Test

The Off-line Ethernet Echo Test is very similar to the On-Line Echo Test. Refer to Chapter 6, On-Line Diagnostics, for a complete description of the Echo Test.

Offline Ethernet Diagnostic
 1 **Echo Test**
 2 **Go To Previous Menu**
Please enter selection:

 1 **Start Test**
 2 **Property**
 3 **Quit**

When you select 1, Start Test, the test runs. When you select 2, Property, the Echo Test Property Window displays. When you select 3, Quit, you are returned to the previous menu.

Interface Test

This command automatically runs the LSI Diagnostics (on the Ethernet Controller Chip) and an Internal Loopback.

Ethernet Datalink LSI Diagnostic

This command diagnoses the Data Link Controller on the IOP PWB.

Ethernet Internal Loopback Test

This command tests the serial interface of the Data Link Controller, using an internal loopback.

Communication Turnaround Test

This command determines if the Transceiver Cable and/or the IOP PWB are working properly. A Communications Turnaround Plug is required to run this test.

Notes:

Rigid Disk Physical Volume

The rigid disk drive consists of one or more platters. These platters are divided into tracks and sectors (pages). A cylinder is the same track on all platters. A track is a circular tracing on a platter. The tracks are divided into sectors (pages). The number of cylinders, tracks, and pages depends on the size of the rigid disk drive (10MB, 20MB, 40MB, 80MB, 100MB, or 190MB).

Each rigid disk drive contains a physical volume with one or more logical volumes. The physical volume contains Pilot data structures required for the system to function (Pilot is the disk operating system). These data structures are the physical volume root page, the bad page table and the Self Describing Disk (SDD) page. All are on the first cylinder (Cylinder 0) of the drive (Figure 4-2). Cylinder 0 is guaranteed by the vendor to be free of errors.

PV Root   Bad   SDD
Page   Page   Page
           Table

```
         \      |                          |
          \     |                          |
    ┌──┬──┬──┬──┬──┬──┬──┬──┬──┬──┬──┬──┬──┬──┬──┐
    │░░│░░│  │  │░░│  │░░│  │░░│  │  │  │░░│  │  │
    └──┴──┴──┴──┴──┴──┴──┴──┴──┴──┴──┴──┴──┴──┴──┘
     0  1  2  3  4  5  6  7               14  15
```
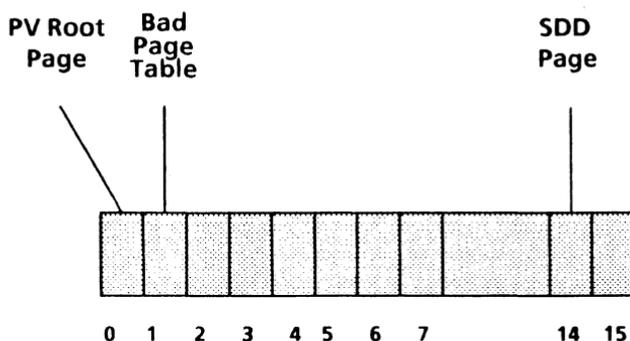
Figure 4-2. Cylinder 0 on the Physical Volume

- The physical volume root page resides on Page 0. It contains information about the physical volume and the logical volumes contained on the disk.

- The bad page table is located on Page 1. It can contain up to 128 bad pages. A bad page on Cylinder 0 cannot be entered into the Bad Page Table. Therefore, if Cylinder 0 contains a bad page that cannot be repaired by the Test Bad Pages program or by installing software, the drive must be replaced.

- The SDD page is located on Page 14 of Cylinder 0. The rigid disk drive type and parameters are written on this page. This allows a variety of rigid disks to be used. The rigid disk drive must meet the following conditions:

  - The disk must be formatted
  - The SDD page must be readable
  - The SDD page information must be valid

- The system checks for the presence of an SDD page on the rigid disk when the 6085 PCS is booted. If the SDD page is present, the system uses the parameters recorded on the disk. If the SDD page is not present, the parameters recorded in the EEPROM on the IOP or IOP-2 PWB are used.

Rigid Disk Page Structure

Each page (sector) on the rigid disk consists of a header, a label, and a data field written on the disk in that order. The header, label, and data fields occupy a set amount of space for each page (sector).

The header describes the cylinder, head, and sector location information.

The label identifies the content of the page for the Pilot file system (the Pilot file number and the Pilot page number). The label describes the file where the sector belongs and the relative position of the sector in the file.

The data field contains the client data (user data, system software, and so forth).

■ **6085-2 PCS** The 6085-2 PCS uses Pilot 15.0. This version is a labelless operating system and the disk label check function is no longer used. Errors reported by Pilot may take the form of "Data Lost Page" or "Unrecoverable Disk Error." However, when you perform the System Checks and/or RAPs, the Off-Line Diagnostics may report these errors as label errors, depending on the error location and type ("Label CRC Error" for example). The Off-Line Diagnostics messages have not changed at this time. You should have little difficulty resolving data problems on the rigid disk drive if you perform the procedures in the Service Manual as written. ■

Rigid Disk Logical Volumes

∎The rigid disk is partitioned into Logical Volumes. Logical Volumes are the logical restructuring of the media into specific categories, such as User and Scavenger Areas. The boundaries for these volumes are predetermined by software, and they are set when the disk is partitioned. Table 4-1 shows how the rigid disks are partitioned. The underlined numbers are the root pages. See the table on page 4-63 for model definitions.

Logical volumes also contain critical data structures for Pilot to function. They are the logical volume root page and the marker page.

- The logical volume root page resides on the first page of the logical volume (FirstLVPage). It contains information about the logical volume and its layout.

- The logical volume marker page resides on the last page of the logical volume. It contains additional information about the logical volume root page.∎

∎Table 4-1 Rigid Disk Layout∎

Rigid Disk Drive	Cylinder "0"	Scavenger	User
10MB Mod 1	000-0127	0128-02328	02329 +
10MB Mod 2	000-063	064-02264	02265 +
20MB Mod 1	000-0159	0160-02860	02861 +
20MB Mod 2	000-0127	0128-02828	02829 +
20MB Mod 3	000-0191	0192-02892	02893 +
20MB Mod 4	000-0127	0128-02828	02829 +
T20MB Mod A	000-0159	0160-03160	03161 +
T20MB Mod B	000-0127	0128-03128	03129 +
T20MB Mod C	000-0191	0192-03192	03193 +
T20MB Mod D	000-0127	0128-03128	03129 +
40MB Mod 1	000-0255	0256-04056	04057 +
40MB Mod 2, 3	000-0159	0160-03960	03961 +
40MB Mod 4	000-0191	0192-03992	03993 +
T40MB Mod C	000-0159	0160-04560	04561 +
T40MB Mod D	000-0191	0192-04592	04593 +
80MB Mod 1	000-0255	0256-06356	06357 +
100MB Mod 1	000-0287	0288-07388	07389 +
190MB Mod 1	000-480	0481-12781	12782 +

Rigid Disk Diagnostics

The Rigid Disk Diagnostics are primarily used to test the functionality of rigid disk hardware, to isolate rigid disk problems with identification of the failing field replaceable component, and to provide all the error data available.

The rigid disk is the most critical component because this is where data is stored. Detecting problems early can prevent serious damage to the rigid disk.

Rigid Disk Tests are generally run when a disk problem is suspected. You would not normally load the Rigid Disk Diagnostics from the rigid disk, since this is the device which has the suspected problem.

The first menu displayed after Rigid Disk Diagnostics is entered is the User Test Selections:

TEST SELECTION

1   Confidence Test
2   Display Options
3   Go to previous menu

Please enter selection:

When the appropriate password is used, the System Administrator Test Selections are:

TEST SELECTION

1   Confidence Test
2   Verify Disk Surface
3   Display Options
4   Go to previous menu

Please enter selection:

When the appropriate password for field service support is used, the Rigid Disk Diagnostics has an additional test selection, New Disk Check Out:

TEST SELECTION
1 Confidence Test
2 Display Options
3 Verify Disk Surface
4 New disk check out
5 Go to previous menu
Please enter selection:

If the "Go to previous menu" option is selected or <**STOP**> is pressed, the program returns to the previous menu.

Confidence Test

The Confidence Test is a key tool in the Rigid Disk Diagnostics for the customer or field support person. The Confidence Test does a thorough, non-destructive verification of the rigid disk drive. The test looks for hard errors and excessive soft errors. It presents the user with either a PASSED or FAILED message at the end of the test. If the test fails, a failure code is displayed.

The Confidence Test consists of a number of subtests, each designed for a specific purpose. While a subtest is running, its name is displayed in the message area of the screen.

The following groups of subtests are executed sequentially:

Sector/Head/Cylinder address logic verification
Write/Read circuitry verification
Create errors and verify error logic
Legal I/O commands verification
Random Seek/Read tests
Surface verification

The Surface Verification subtest is similar to the Verify Disk Surface option. This subtest has the following features.

1. Bad pages found during this test are now listed.
2. The seek direction is reversed on each pass.

During the Confidence Test, disk operations resulting in soft errors are automatically retried. Also during the Confidence Test, 0000, 1111, 0101, and 1010 are written on the

Diagnostic Cylinder and then read and verified. The label and/or data verifications will not be performed unless the previous write operation is successful.

Display Options Menu

The User display selections are:

TEST SELECTION
1 Display Error Log
2 Display Encountered Soft Errors
3 Go to previous menu

The System Administrator display selections are:

TEST SELECTION
1 Display Error Log
2 Display Trace Table
3 Display Encountered Soft Errors
4 Go to previous menu

The Technical Support display selections are:

TEST SELECTION
1 Display Error Log
2 Display Trace Table
3 Display Encountered Soft Errors
4 Rigid Disk Parameters
5 Go to previous menu

Display Error Log

All of the Rigid Disk Tests (such as the Confidence Test and Surface Verification) save diagnostic-encountered errors in a circular log. By selecting the Display Error Log selection, a user can examine these diagnostic-encountered errors.

If the log is empty, the following message is displayed:

The error log is empty.

Display Trace Table

This selection gives the user the ability to examine the sequence of Input/Output commands issued to the rigid disk subsystem for the purpose of identifying command sequence problems. The Trace Table is a circular buffer; that is, when the buffer fills completely, commands are logged starting at the beginning of the buffer again, overwriting existing information.

A user enters this test from the Display Options menu. If the trace table is empty, the following message is displayed:

The trace table is empty.

Display Encountered Soft Errors

This selection enables soft errors to be displayed when they occur during a test. With this information, the condition of the disk hardware can be identified.

If there were no soft errors, the following message is displayed:

No errors

Rigid Disk Parameters

■ This test selection displays the rigid disk parameters available from the EEPROM or the SDD page. The following information is displayed: ■

- First and last unit on the system
- First and last cylinder on the drive
- First and last head on the drive
- First and last sector per track

When Rigid Disk Parameters is exited, control is returned to the Display Options Menu, which is redisplayed. No errors are involved in this test selection.

■ *NOTE: If you use level 1.5.2 Diagnostics, the system will read the Rigid Disk Parameters from the EEPROM. If you use level 2.0.1 Diagnostics, the system will read the Rigid Disk Parameters from the SDD page, if the SDD page is present.* ■

Surface Verification

This test is presented to the System Administrator and Technical Support personnel as a menu selection in the top level menu for the rigid disk subsystem.

Verify Disk Surface is a tool that verifies the integrity of the read electronics and the data on an entire disk surface. It tests for both hard and soft errors. The test should not be used as a diagnostic.

If an encountered soft error is in the bad page table, then the error is ignored. All other errors are displayed on the screen; these errors can be redisplayed at the end of the test, via the Display Options menu.

While the test is running, test parameters and diagnostic data are displayed on the screen.

The following is an example of a typical screen display a user is likely to encounter while running Verify Disk Surface.

Passes to run: < Count >   **Remaining pass count:** < Count >

A soft error is displayed in the following format:

Page: 133 Cylinder: 2 Head: 0   Sector: 13 Tries: 10   Failures: 4

If the test terminates without detecting any errors, hard or soft, the screen displays *"No Bac Pages."*

If soft errors were detected, then, in addition to the soft error messages, the screen displays "*Done.*"

If hard errors were detected, the screen displays *"FAILED."*

NOTE: The Technical Support Level has the ability to change the Soft Retries default value "9." The number should be between 2 and 4 for maximum reliability. The retries are the number of times a page will be checked before detected as bad.

New Disk Check Out

CAUTION

Use this procedure only under the direction of a Region Engineer (RE) or the Technical Support Center (TSC).

The New Disk Check Out performs a thorough and destructive verification of the rigid disk drive. Do not use this test for normal disk drive replacement (if the software is pre - loaded on the disk).

∎The New Disk Check Out is made up of several subtests, each designed for a specific purpose. When a subtest is running, its name is displayed in the message area of the screen.

The following subtests are executed sequentially:

- Format disk
- Sector/Head/Cylinder address logic verification
- Write/Read circuitry verification
- Create errors and verify error logic
- Legal I/O commands verification
- Random Seek/Write/Read tests
- Surface verification

The New Disk Check Out looks for hard errors and repetitive soft errors. Soft errors are displayed on the screen as they occur and can be displayed again at the end of the test. The test provides the user with either a PASSED or FAILED message.

The Self Describing Disk Page 14 is overwritten when the New Disk Check Out is performed. The short Format disk subtest within the New Disk Check Out does not write the rigid disk parameters to Page 14 of the rigid disk drive.∎

∎You must perform the Format Disk routine to write the rigid disk type and parameters to Page 14 after the New Disk Check Out has been run.∎

Failure Codes

Failure Codes identify and prioritize the repair of Field Replaceable Units (FRUs) (Table 4-2). Failure Codes are presented to all users running the Rigid Disk Diagnostics.

∎Table 4-2. New Disk Check Out Failure Codes∎

Failure Code	Description
1	Replace the IOP or IOP-2 PWB.
2	Replace the IOP or IOP-2 PWB.
3	Replace the IOP or IOP-2 PWB. If the problem still exists, it may be a rigid disk drive media problem, which may be repairable with the scavenger. Otherwise, ensure the customer has backed up the data, then format the disk, and restore the data.
4	A bad page is not in the bad page table, which may be repairable with the Scavenger or the Bad Page Utility.
5	Reserved.
6	Physical Volume problem. Possibly repairable with the Physical Volume Scavenger, or the user may be running the wrong diagnostic test. (The Confidence Test and/or Surface Verification will not run unless a Physical Volume exists on the rigid disk drive).
7	Software problem. If this code is displayed, call the Systems Analyst. If the software cannot be repaired or if the Systems Analyst cannot resolve the problem, replace the MPB or MPB-2 PWB.

Table 4-2. New Disk Check Out Failure Codes

Failure Code	Description
8	Real Time Clock error. If this is a networked system, run the Ethernet diagnostics. If this is not a networked system, or the Ethernet Diagnostics completes successfully, and the problem still exists, replace the IOP or IOP-2 PWB. If the problem persists, replace the MPB or MPB-2 PWB.

Rigid Disk Utilities

The Rigid Disk Utilities are primarily used for disk recovery procedures for errors found by the Rigid Disk Diagnostics.

The utilities provide a disk formatter, a physical volume scavenger, facilities to display and add new pages to the Bad Page Table, and Disk Page Header Repair capability. To minimize damage to the disk, run the Rigid Disk Diagnostics before entering Bad Pages into the Bad Page Table.

The utility initially prompts the user with:

Is this disk formatted?

The default for this prompt is YES, and the choices are YES and NO. The help text for this prompt is:

An unformatted disk is a brand new disk that has never been used. It must be formatted first, or other operations may hang.

The prompt should be answered YES unless you are certain that the disk has never been formatted. If the disk has been formatted before, and you answer YES to the prompt, the existing (preformat) bad page table will be saved when the disk is reformatted.

At the end of the format operation, you will be given the following options:

- Combine the Preformat Bad Page Table with the new Bad Page Table
- Discard the entire Preformat Bad Page Table
- Test the new Bad Page Table.

If the disk has not been formatted, certain operations which can be executed successfully only on formatted disks cannot be performed. These operations include any commands in the utility other than formatting or scavenging.

The main utility menu appears following the initial prompt. The menu selections for "Normal User" are:

Formatter, Scavenger, Bad Page Utilities
1   Run Physical Volume Scavenger
2   Bad Page Utilities
3   Head Retraction
4   Go To Previous Menu
Please enter selection:

The menu selections for System Administrator and Technical Support are:

Formatter, Scavenger, Bad Page Utilities
1   Format Rigid Disk
2   Run Physical Volume Scavenger
3   Bad Page Utilities
4   Head Retraction
5   Go To Previous Menu
Please enter selection:

Format Rigid Disk

The help message associated with this menu selection is:

Formats rigid disk, creates physical volume RD0 and logs bad pages.

The following are other messages that are associated with this menu selection:

Formatting irrevocably destroys the disk data. Proceed? (Y/N):

This is a confirmation prompt for "Format Rigid Disk" menu item.

Are you sure?

Last warning...Are you still sure?

▮These are further confirmation messages. If you select NO for either prompt, the command is aborted and the main menu is displayed. If you select YES for either prompt, you are then asked to select a disk type. If the disk is self-describing and corresponds to one of the standard types, the name of that type is displayed; you may select YES or NO to confirm or change the type.

A menu of disk types is displayed if the disk is not self-describing, does not correspond to a standard type, or if you request a change. You may select a type or define a new type.▮

Number of passes:

This is a prompt for the Format disk menu command. The time required for each pass for formatting a disk is from 3-15 minutes, depending on the size of the disk. More than one pass will help to find more potentially bad spots on the disk.

The number of passes for testing a single page indicates the number of times the page is tested. The default is 25, with 11 data patterns: FFFF, 0000, AAAA, 5555, 6666, 9429, BD68, 4294, D6BD, 2942, and 9303.

Number of retries per pass:

This is a prompt for the Format disk menu command. Retries are the number of times that a page will be checked before it is noted bad. This retry count is significant only for instances when a page is detected bad, thus will not increase the time of a scan or formatting as much as the pass count. The retry number should always be 0 (zero) during formatting to get maximum reliability.

The Formatter, to isolate between extraneous read errors and surface defects in Cylinder 0, will attempt to read the bad page 200 times. If the error cannot be repeated, then it is an extraneous soft error and not a bad page.

If no problem is found during the retries, then that page will be treated as a good page.

If the same bad page occurred again or if more than six bad pages occurred and the total number of passes was less than 401, then the Formatter will be terminated with the message *"Cylinder 0 problem."*

NOTE: *If the user specified more than 400 passes, then the Formatter will continue even though the above conditions exist, in order to provide statistics. In this case, the user must display the soft error list in order to determine the soft error rate.*

PASS and RETRY COUNTS

Here are the help texts for the Pass count and Retry count prompts of the Format command.

- PASSES - the number of times to go over the disk for bad pages.

- RETRY COUNTS - the number of times to verify a page before declaring it bad.

Formatting...

This is displayed in the message window while the disk is formatting.

Preformat Bad Page Table

This is the heading for the display of the old bad page table. When a disk is reformatted that is not a brand new disk, the old bad page table is saved. The user is given the choice of combining the pages from the preformat table with the new table or discarding the Preformat Bad Page Table.

Formatting information

This is the heading for the display while the disk is formatting. The display information includes:

- The number of passes

- The number of retries

- The number of new bad pages found.

- Whether or not the old bad page table was saved

A message shows "Saved" to indicate that a bad page table has been saved before formatting and "Not saved" to indicate otherwise. If saved, the count indicates the number of entries in the old bad page table.

Should I get confirmation from you page by page?
This message is displayed after reformatting a previously formatted disk when the user chooses to combine the old bad page table with the new. This prompt gives the choice to add all the pages from the old bad page table at once (answer NO), or to add page by page with further confirmation (answer YES).

RAM bad page table overflowed.
While formatting, the internal bad page table ran out of space. This may also indicate a hardware failure. Long Boot Diagnostics should be run before adding more pages to the bad page table.

Preformat bad page table disposition [1-Combine 2-Discard 3-Test]
This message displays after reformatting a previously formatted disk. The user can choose the following options:

- Combine the old bad page table with the new
- Discard the old (saved) bad page table
- Use only those pages found while formatting
- Test pages individually. The pages which are tested are from the old bad page table.

Bad Page Disposition

This is the help text for the prompt after formatting an unformatted disk.

- Combine – adds the preformat bad pages to the current bad page table.
- Discard – throws away the preformat bad pages.
- Test – users can test, add, repair or discard each page individually.

Add this page?

This is a confirmation prompt when adding bad pages from the old bad page table after reformatting a previously formatted disk and combining the old with the new.

Quitting will destroy RAM table. Ready to quit?

This message displays when the user has selected QUIT after reformatting a previously formatted disk, and after combining the old bad page table with the new on a page-by-page basis. This prompt reminds the user that the old bad page table will be lost. NO returns to the page-by-page selection choice, and YES discards the old bad page table and returns to the top level menu.

Run Physical Volume Scavenger

The help message associated with this menu selection is:
Checks the integrity of the physical volume. Returns the physical volume to a consistent state.

The following are other messages that are associated with this menu selection:

Should I perform safe repair?
This is the first prompt when the "Scavenge Physical Volume" menu item is selected. This prompt is displayed before the test begins. If NO is selected, problems will be reported, but will not be repaired. If YES is selected, data structures will be repaired but only if the repairs are not potentially harmful to user data.

CAUTION
This is a destructive command if you select Y to the following question.

Should I perform risky repair?
This is the second prompt when the "Scavenge Physical Volume" menu item is selected. This prompt is displayed before the checking begins. If NO is selected, serious problems will be reported, but will not be repaired. If YES is selected, data structures will be repaired even if the repairs are potentially harmful if there is a problem with the hardware. Risky repair should not be selected unless the disk subsystem has been verified in good condition by running Long Boot Diagnostics. If possible, user data should be backed up before risky repair is attempted.

The help messages for this prompt are:

Physical Volume Scavenging.
Is responsible for the integrity of the physical disk only.
Attempts to repair damaged physical volume data structures.

Are you sure?
Last warning...Are you still sure?
Since data may be lost, confirmations are requested after the user has selected the command and selected risky repair. If the user selects NO for either prompt, the command is aborted and the main menu is presented for selection.

Scavenging...
This message is displayed while scavenging is in progress.

No problem found.
This is a completion message of physical volume scavenge when no repair was necessary.

Damage detected...
Damage Report
Internal Structures:
This is a completion message of physical volume scavenge when problems have been detected. The bad page table and other data structures which were damaged are displayed. Data structures may be reported as "Lost" or "Damaged." If risky repair was selected, then an attempt has been made to repair the damage and will be reported. If risky repair was not selected, then the report will indicate what areas still have problems.

Has been repaired.
This is a Scavenge completion message when risky repair was selected and attempted.

Volume and boot file formats are inconsistent. Shall I convert it? (Y/N):
This is a prompt for physical volume scavenge while scavenging. It indicates a problem in compatibility between versions of the boot files and the physical volume. If YES is selected, conversion is attempted and the scavenge resumes. If NO is selected, the scavenge is terminated immediately, and the user is returned to the main menu. If this prompt repeats even though you select YES, terminate the command by selecting NO.

Volume cannot be scavenged.
This message is displayed when the user selected NO to the conversion prompt while scavenging.

Bad Page Utilities

The help message associated with this menu selection is:
Provides various utilities to handle bad pages.

Display Bad Page Table

This command is available to the Normal User, System Administrator, and Technical Support classes of users.

The help message associated with this menu selection is:
Displays the contents of the existing Bad Page Table.

This command displays the bad page table in the bottom section of the screen. The entries are sorted by page number. The display shows only the page numbers.

Scan Disk For New Bad Pages

This command is available to the Normal User, System Administrator, and Technical Support classes of users.

The help message associated with this menu selection is:
Scans the entire disk surface for bad pages.

Other messages associated with this menu selection are:

Please enter the number of times to scan the disk:
This is the first prompt for the Scan disk menu, indicating the number of passes over the entire disk surface. The default is 1. The disk examination will be more thorough as the number of passes increases. Each scan pass will take 3-15 minutes, depending on the size of the disk and the number of retries.

Soft Retries: 9
The retries are the number of times a page will be checked before it is determined bad. The Technical Support Level has the ability to change the default value. The number should be between 2 and 4 for maximum reliability.

Scanning disk for new bad pages.
This is a progress message while scanning for new bad pages.

Scan Count information
Desired Scan Count:
Scans Completed:
New Bad Page Count:
This data is displayed while scanning the disk.

Scanning stopped because of RAM bad page table overflow.
This is a termination message for the Scan command when more pages are found than can be saved. This usually indicates a hardware problem, so Long Boot Diagnostics and Rigid Disk Diagnostics should be run to determine if something other than the disk surface is damaged. Scanning should be restarted if components other than the disk drive are replaced.

Please Select Option
[1–Test, 2–Repair, 3–Mark Bad, 4–Next]
After scanning the disk for bad pages, this prompt gives the user the choices indicated for each page which was suspected bad.

- Test – rescans the given page.
- Repair – attempts to repair the page. The user is given an indication of the action required, which may include rebooting the volume affected.
- Mark Bad – enters the page into the bad page table.
- Next – goes to the next page in the list.

Would you like to repeat the operation? Overflow encountered. Rescan disk to find remainder of bad pages?
These are confirmation prompts at the end of a Scan command which allow the user to repeat the command without entering the pass and retry counts again. The first prompt is the

normal completion prompt and the second prompt occurs when the internal bad page table has overflowed.

Manual Entry of Bad Pages

This command is available to the System Administrator and Technical Support classes of users.

CAUTION

If software and/or customer data is on the rigid disk, entering bad pages in the Bad Page Table could be destructive. Go to the recovery procedures in RAP 9 of the 6085 PCS Service Manual before entering Bad Pages.

The help message associated with this menu selection is:

Adds entries to the bad page table by page number or manufacturer's error map.

This command presents another menu. The user may choose to enter bad pages either by page number or via manufacturer's error map (i.e., cylinder, head, sector, and offset).

Enter by Page Number

This command is available to the System Administrator and Technical Support classes of users.

The help message associated with this menu selection is:

Adds a specified bad page to the BAD PAGE TABLE.

The following are other messages that are associated with this menu selection:

Please enter bad page number to be marked bad:
This is a prompt to enter bad pages by page number. The page number must be in the range which is valid for the disk installed, and cannot be in Cylinder 0.

Adding bad pages to the Bad Page Table.
This is help text for the menu item "Add Bad Page to Bad Page Table." Once marked bad, the page cannot be used again. Type the page number to be added, or press **<STOP>** to quit.

Enter by Manufacturer's Error Map

This command is available to the System Administrator and Technical Support classes of users.

The help message associated with this menu selection is:

Converts the manufacturer's error map entries into page numbers and adds them to the BAD PAGE TABLE.

When this command is selected, it prompts for cylinder, head, sector, offset, and number of bits or bytes in the bad spot. This series of prompts continues until the user presses < STOP > to exit back to the Manual Entry of Bad Pages menu.

The following are other messages that are associated with this menu selection:

Is the bad spot length in bits?
The bad spot length can be given in two formats: in bits or bytes. This is a prompt and help text when the menu item "Enter by Manufacturer's Error Map" is selected. YES selects "bits," and NO selects "bytes." There are 8 bits in one byte. The drive manufacturer's specification indicates which to select.

Bad page to be added:
This is a message indicating what page number(s) is affected when adding bad pages from the manufacturer's error map. Depending where the error is on a track, more than one page may be affected.

Shall I mark the pages bad?
When entering bad pages from the manufacturer's error map, the affected page numbers are displayed and a confirmation is requested. If YES is selected, the indicated pages will be added to the bad page table. In either case, the user is then prompted to enter another page. Pressing **<STOP>** exits this loop.

Pages marked bad.
This message is displayed along with the page numbers after the affected pages are displayed and the user confirms entering them into the table.

No bad pages written to disk.
While entering bad pages from the manufacturer's error map, the user did not confirm via the prompt to add the page to the bad page table. This message indicates that the pages listed were not added.

More to go?
This is the final prompt when adding pages to the bad page table. YES prompts for a new page number, and NO returns to the menu for entering bad pages.

Page Scavenger

CAUTION
This is a destructive command.

This command is available to the Normal User, System Administrator and Technical Support classes of users.

The help message associated with this menu selection is:
Attempts to make an unreadable page readable.

NOTE: This command also is used to repair Root Pages.

Given a page number, this command attempts to restore the page if it is damaged.

The following error messages indicate a hardware problem other than a media error:

Drive not available
Drive not ready
Unknown drive

The "User action:" message indicates what the user should do after the page scavenge is complete:

Fix page header, mark page bad or call Technical Support
Reboot volume with the offending page
Scavenge logical volume containing the specified page

Scavenge physical volume...

If no problem is found, run File Check on the logical volume containing the page.

The following completion messages indicate the status of the operation:

Good completion
Page not found
Cannot verify label
Failed to seek to cylinder containing page
Check error. Contents of data cannot be verified.
Page has a data CRC error
Hardware error encountered
Drive is not ready
Label CRC error
Header CRC error
Header not found

The following messages indicate the repair status of the page:

Page contents Reliable
Page contents Unreliable
Page contents Unknown

The final message for this command indicates "Page repaired" or "Page not repaired."

Fix Bad Page Headers

This command is available to the System Administrator and Technical Support classes of users.

The help message associated with this menu selection is:

It saves the data on the track with the bad page header, reformats the track and restores the good pages.

This command fixes damaged headers for sectors on the rigid disk. The data in the bad page, if also damaged, cannot be restored. The user action required, if any, is displayed when the header has been repaired.

Broken page information
Saving data on track...
Track data saved
Track will be formatted next...Do you want to continue?
Formatting track...
Restoring track data...
This data displays while executing the Fix Bad Page Headers command.

Each page on the track is displayed in a table, which indicates whether or not the data could be saved. The table contains the headings:

Page–Number: Cylinder Head Sector Save–Status Restore–Status

- Save – the status of the read operation before formatting the track.
- Restore – the status of the write operation after formatting the track.

If NO is selected in response to the prompt, the user is returned to the menu. If data is lost, the user should run File Check.

Reset Bad Page Table

This command is available to the System Administrator and Technical Support classes of users.

CAUTION
This is a destructive test.

The help message associated with this menu selection is:
Destroys disk data and creates a new physical volume.

This command should only be used if many entries have been entered which are incorrect, and the user wishes to start the bad page table again. All entries which had been valid before resetting should be re-entered to avoid disk problems.

Do you wish to destroy the contents of this disk?
This is a prompt to confirm the "Reset Bad Page Table" command. Note that resetting the bad page table will not immediately destroy the contents of the disk, but the contents can be damaged subsequently if the disk is used with the bad pages now made available.

Once the table has been cleared, the user is given the option to re-enter each of the entries in the old bad page table, to test each of the pages in the old bad page table or to discard the old bad page table.

Test Bad Pages

This command is available to the System Administrator and Technical Support classes of users.

The help message associated with this menu selection is:
Determines if a page has hard or soft errors.

The following are other messages that are associated with this menu selection:

Please enter a page number:
Number of passes: 10
Number of retries per pass: 10
More to go? Y
These are the prompts for testing bad pages from the Bad Page Table.

Head Retraction

This command is available to the Normal User, System Administrator, and Technical Support classes of users.

The help and screen message associated with this menu selection is:

To be used before moving or shipping, this utility moves the rigid disk heads to a safe landing zone prior to powering off the 6085.

The following are other messages that are associated with this menu selection:

If you choose to continue, you must power off the machine when requested.

Do you wish to continue? N

Are you sure? N

Heads retracted, please power off the 6085... The keyboard locks and the 6085 should be powered off.

Additional Off-Line Rigid Disk Utilities Messages

An unformatted disk is a brand new disk that has never been used. It must be formatted first, or other operations may hang.

This is help text for "Is this disk formatted?" prompt.

Are you sure?
Last warning...Are you still sure?

This is a confirmation prompt after the user has selected a command which has potential to destroy data. Such commands include formatting or scavenging with risky repair. If the user selects NO for either prompt, the command is aborted and the previous menu is presented for selection.

Bad page table on disk is full. Operation aborted.

This is a termination message when trying to enter bad pages into the bad page table. It indicates that no more room exists in the bad page table on the disk. When this occurs, the disk can no longer handle bad spots. If Rigid Disk Diagnostics indicate that the drive is the problem, it should be replaced.

Bad pages detected on Cylinder 0! Please contact Technical Support.

This is reported whenever bad pages are found (via formatting or page scavenging) on Cylinder 0. Contact Technical Support for assistance. If the problem is found during Confidence Test or Surface Verification, and the first or second page (0 or 1) of the volume shows as a bad page, with Failure Code 6, run

Physical Volume Scavenger. For any other page, run Fix Bad Page Headers.

Bad spot falls in an unused gap. Ignore it.
When entering pages from the manufacturer's error map, this message indicates that the error falls into one of the gaps which are not used on the disk. It cannot be entered into the bad page table because it is not in any page.

Completed
This message is displayed when lengthy commands have completed, such as formatting, scavenging, or scanning.

Creating Pilot volume named RD0 to hold Bad Page Table...
This message is displayed at end of formatting, indicating that a physical volume is created as named.

Drive not found. Enter any key to continue.
This is a hardware error message which would be displayed before the main menu. It indicates Rigid Disk Diagnostics should be run before continuing. After pressing a key, you will be back at the logon menu.

End of bad page table.
This message displays after formatting a previously formatted disk when the old and new bad pages have been combined.

If system hangs, then the disk is either an unformatted disk or the hardware is bad.
This warning message is displayed whenever the physical volume identification is being checked. If the system pauses or stops at this point, it indicates a hardware problem. The

Rigid Disk Diagnostics should be run before proceeding.

No bad pages found
This message is displayed when the bad page table is selected to be displayed and the table exists but it is empty.

Should I overwrite data if required?
This prompt occurs whenever a page is selected for repaired. This occurs in "Scavenge a page," and "Scavenge Physical Volume." If data is overwritten, it will be lost.

Soft errors:
Hard errors:
This is the data reported when formatting or testing a page via Confidence Test, Surface Verification, or Page Scavenger commands. Soft errors indicate that an error occurred but the operation succeeded when retried (i.e., not all test passes failed but at least one did). Hard errors indicate that the error occurred on every attempt. If ten tries are selected, and all ten attempts failed, the error is determined "hard." If the first attempt failed, but at least one retry succeeded, the error is counted as "soft."

This operation cannot be performed on an unformatted disk!
This warning message is displayed whenever a command is selected which is invalid for an unformatted disk and the disk is unformatted. The disk is unformatted if the user says NO to the "Is this disk formatted?" prompt, or if disk errors occur when trying to read the physical volume identification or the bad page table. The commands which are disabled for non-

formatted disks include scavenging, displaying bad pages, or entering bad pages. After displaying this message, the current menu is reactivated for selection.

Unable to access bad page table
This indicates that the physical volume needs scavenging.

System Configuration Utility

∎The System Configuration Utility is used to record the configuration of the 6085 system in the EEPROM on the IOP or IOP-2 PWB. You must reconfigure the System Configuration whenever you upgrade a component or when you install a new system, a new rigid disk, a new option, or additional memory.

NOTE: *A description of the disk is written to the EEPROM and to the rigid disk Cylinder 0, Page 14 (the SDD Page) during the following operations:*

- *Rigid disk format*
- *System Configuration Utility, when updated with the Off-Line Diagnostics, Version 2.0.1 (or later).* ∎

The Network Executive Menu System Configuration Utility is similar to the Off-Line Diagnostics System Configuration Utility.

The Normal User selections of System Configuration Utility are:

System Configuration Utility
1 Set Configuration
2 Show Configuration
3 Go To Previous Menu
Please enter selection:

System Administrators and Technical Support personnel should select the User level System Configuration Utility unless they must set an option that is not available from the user level.

When the appropriate password has been entered, the System Administrator and Technical Support selections are:

System Configuration Utility
1   Set RAM Bad Page
2   Set Boot Device Parameters
3   Set Default Boot Diagnostics Parameters
4   Set Display Parameters
5   Set Floppy Disk and Cartridge Tape Parameters
6   Set Keyboard Parameters
7   Set Memory Size
8   Set PC and Other Option Boards Parameters
9   Set Rigid Disk Parameters
10   Set VM and Control Store Parameters
11   Set Hardware Version Number
12   Recalculate And Display EEPROM Checksum
13   Read actual EEPROM contents and abort all modification
14   Show modified EEPROM contents (in HEX format) to be written
15   Show modified EEPROM contents to be written
16   Write EEPROM with Manufacturing Defaults
17   Write EEPROM
18   Go To Previous Menu

Please enter selection:

Understanding Virtual Memory

Changing the Virtual Memory (VM) size to 24 bits in the System Configuration Utility does not make the 6085 run faster or better. Currently, the VM size should be changed to 24 bits only when the Scanner Printer Option (SPO) is installed.

∎Virtual Memory is the total memory a program needs to run. Real Memory is the physical memory (on the DCM and MEB PWBs, or the DCM-2 PWB) that the hardware makes available to the disk operating system (Pilot).

The 6085 CPU real memory varies from 1.1 to 3.7 megabytes (the 6085-2 PCS contains 4 megabytes of memory). Through the use of a virtual memory structure, pages of virtual memory can be "swapped" back and forth between the real memory and the rigid disk (Figure 4-4). Therefore, programs that are larger than the real memory can operate and/or be processed.∎

The operating program, such as ViewPoint, XDE, or XPIW, is only concerned with Virtual Memory. The actual process of swapping pages between the real memory and the rigid disk is handled by Pilot. This process is transparent to the program.
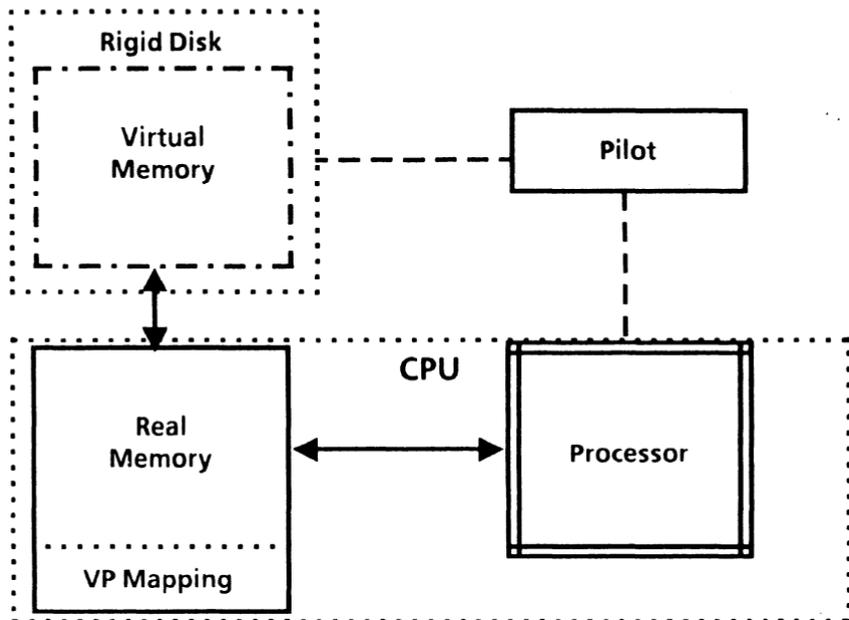
Figure 4-4 Virtual Memory Structure

The Virtual Memory Map uses general-purpose real memory, so it is desirable to use the smallest virtual memory size necessary. This is determined by the developer of the software application. The larger the virtual memory, the greater the percentage of the real memory required to map the virtual memory. With 3.6 megabytes of real memory, the percentage used for mapping is small, by comparison, and does not present a problem. However, with a smaller amount of real memory size, for example 1.1 megabytes, large virtual memory mapping uses up such a large percentage of the total real memory that performance is degraded.

User Level System Configuration Utility

Show Configuration

When this option is selected, the current system configuration is displayed. All 6085s are shipped with preset system configuration data in the processor unit. This preset (or initial) configuration assumes the following options:

```
   1 - Return To The Previous Menu
Enter selection choice: 1
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
                    CURRENT CONFIGURATION
   Keyboard:              U.S.
   Rigid Disk Drive:      Not present (See NOTEs below)
   Memory:                1.1 MB
   Floppy Disk Drive:     360 KB
   Cartridge Tape Drive:  No
   Network Connection:    Yes
   PC Option:             No
   Universal Option:      Not Present
   Automatic Diagnostics: No
   Virtual Memory Size:   Twenty-three bits
```

Figure 4-4 Show Configuration

NOTE: The rigid disk drive option is normally preset to indicate that **no rigid disk drive is present**. The configuration must be reset to reflect the rigid disk drive that will be used with the system.

■*NOTE:* *Refer to the size/model label on the rigid disk drive cover assembly. If the label is incorrect, refer to Table 4-3. Some of the bad pages noted by the manufacturer may be out of range and cannot be entered due to the logical disk size limitations (areas not accessed by the software). However, this is not a problem as long as the correct Disk Drive Model number is entered during configuration.* ■

Mark a blank label and attach it to the rigid disk cover assembly so it can be viewed without removing the drive.

■**Table 4-3   Rigid Disk Drive Models**■

Model		Model	
Vendor	Xerox	Vendor	Xerox
ST212	10MB Mod 1	Q540	40MB Mod 1
ST213	10MB Mod 2	M1303	40MB Mod 2
TM703	20MB Mod 1	ST4051	40MB Mod 3
ST4026	20MB Mod 2	ST251	40MB Mod 4
Q530	20MB Mod 3	ST4051	T40MB Mod C
ST225	20MB Mod 4	ST251	T40MB Mod D
TM703	T20MB Mod A	M1325	80MB Mod 1
ST4026	T20MB Mod B	94355-100	100MB Mod 1
Q530	T20MB Mod C	XT2190	190MB Mod 1
ST225	T20MB Mod D		

Set Configuration

When this option is selected, the current system configuration is displayed and may be modified.

The following prompts are displayed for this option. HELP messages are not displayed within the individual prompts.

What language is your keyboard?
You have a choice of three languages:

- U.S. (the default)
- Japanese
- European

Which rigid disk do you have? (Hint: If this is the first installation of this system, the proper rigid disk configuration data is already set. Press carriage return to continue.) WARNING: Backup or store all data files before attempting to change the Rigid Disk Configuration option. Failure to do this may cause unrecoverable loss of the entire disk contents.

■*What is the installed memory size?*

6085 PCS   Note the PWB installed in the C2 slot at the rear of the processor to determine the installed memory size. If a Memory Matrix Label is not present, the system has 1.1MB. If a Memory Matrix Label is present, refer to Table 4-4.■

∎Table 4-4   MEB PWB Memory Matrix Label Markings∎

Grid location marked	Amount of memory represented in MB ·
None	1.6
A	2.1
B	2.6
C	3.2
D	3.7

The letter grids that are marked off on the Memory Matrix Label reflect how many Memory Expansion Banks have been occupied.

∎6085-2 PCS   The DCM-2 PWB has 4.0 MB of memory installed.∎

Which floppy disk drive do you have?
The choices are: NONE, 360 KB and 1.2 MB.

Do you have a Cartridge Tape option? [Y/N] Y
The default is NO.

Do you have an Ethernet network connection? [Y/N] Y
The default is YES.

Do you have a PC Option? [Y/N] N
The default for the Personal Computer Option is NO.

Universal Option:
The choices are: LP Option, SP Option and Not Present. The default is Not Present.

How many bits are needed for virtual memory?
(Hint: Some programs require a minimum size

for virtual memory. If you are not using any of
these programs, then keep the same size which
is shown below. Remember, for virtual
memory size, larger is not always better.)

▮The choices are: 22 bits, 23 bits, or 24 bits. 23
bits is the default. If the processor has the PC
Option and/or the LP Option installed, the bits
should remain at 23. If the SP Option is
installed, change the default to 24 bits.

Do you want Diagnostics to be run
automatically when you reset or turn on your
processor? [Y/N] N
If you type Y, the Boot Diagnostics run
automatically each time the system is reset and
<F1> is pressed. The default is NO. ▮

Do you want your workstation reconfigured
with the options you have selected? [Y/N]: ﹏
If you do not wish to change any currently set
options, enter N.
If you type Y, the next prompt is displayed. If
you type N, this process is aborted.

Please confirm that you want your workstation
reconfigured with the options you have
selected. [Y/N]
If you type Y, the workstation is reconfigured
to reflect any changes you made. If you type N,
the workstation retains the previous (current)
configuration.

Is this disk formatted? [Y]
Always type Y to this prompt unless you are
installing a new rigid disk drive.

NOTE: If you answer Yes to the above prompt, and
the disk is formatted, a description of the rigid
disk is written to the EEPROM and to the SDD
page of the rigid disk drive. If you answer No

and the disk is not formatted, the following message is displayed:

Warning: Disk Error: Unable to write disk parameters to disk

The description of the rigid disk is only written to the EEPROM at that time. After the System Configuration Utility is complete, the rigid disk must be formatted. After the rigid disk is formatted, the description of the disk is written to the SDD page of the rigid disk drive.

Enter any key to continue:
The hardware configuration has been completed. Please note that you must reboot the workstation by pressing the red boot button in order for the changes you have made to take effect.
If you typed Y to the above confirmation prompt, this prompt is displayed.

Enter any key to continue:
The user has aborted the hardware configuration store process.
If you typed **N** to the confirmation prompt, this prompt is displayed.

System Administrator/Technical Support Levels
System Configuration Utility

When this option is selected, the current system configuration is displayed and may be modified.

There are no HELP messages for these utilities.

Set RAM Bad Page

Ensure that all words in the Bad Memory Page Map (in Decimal) are set to 0 (zero).

Set Boot Device Parameters

The options are: NONE, Rigid Disk Drive, Floppy Disk Drive, Ethernet, and New Boot Device.

Set Default Boot Diagnostics Parameters

The options are: Set Boot Diagnostics to Short, Set Boot Diagnostics to Long, and No Boot Diagnostics.

Set Display Parameters

The options are: Present and Not Present.

Set Floppy Disk and Cartridge Tape Parameters

The options are: 360 KB, 1.2 MB, Cartridge Tape, Not Present, Enter value for new disk type, Default configuration, and Do not change. Press <STOP> to exit this utility. This utility is similar to the fourth prompt in the user level Set Configuration, *"Which floppy disk drive do you have?"* and fifth prompt in the user level Set Configuration, "Do you have a cartridge tape option?"

Set Keyboard Parameters

The options are: No Keyboard, U.S., European, Japanese, Lear - Siegler, and Enter New type. This utility is similar to the first prompt in the user level Set Configuration, *"What language is your keyboard?"*

Set Memory Size

6085 PCS There are six options to choose from, where 1.1 MB Memory Setting is the standard size. This utility is similar to the third prompt in the user level Set Configuration, *"What is the installed memory size?"*

■6085-2 PCS Select only the 4.0 Megabytes option. ■

Set PC and Other Option Boards Parameters

The options are: Set PC Option Board Parameters, Set Universal Option Board Parameters, and Override Expansion Interrupt Allocations. This utility is similar to the sixth and seventh prompts in the user level Set Configuration, *"Do you have a PC Option?"* and *"Universal Option"*

If you select Set PC Option Board Parameters, you are asked the following additional questions:

Do you have a PC Option Board (Y/N)? Y
Attributes for PC Option Board Hardware 1 0
Attributes for PC Option Board Hardware 2 0

If you select Set Universal Option Board Parameters, you are prompted with additional options: LP Option, SP Option, Not Present, Enter value for new option type, Default configuration and Do not change.

Set Rigid Disk Parameters

There are two Rigid Disk Type options: Set Fuji Xerox Rigid Disks and Set US/RX Rigid Disks. When you select the rigid disk type, a different window displays the Disk Types Supported. This utility is similar to the second prompt in the user level Set Configuration, *"Which rigid disk do you have?"* Use Table 4-2 in Show Configuration.

5. PERFORMING THE OFF-LINE DIAGNOSTICS

Loading the Off-Line Diagnostics

The Off-Line Diagnostics can be loaded from floppy disks or from the network. This chapter contains display examples for the Workstation Off-Line diagnostics. For information about the Scanner Off-Line Diagnostics, refer to Chapter 9, 7650 Pro Imager Diagnostics. For information about the Cartridge Tape Off-Line Diagnostics, refer to Chapter 10, Cartridge Tape Diagnostics.

∎Loading the Off-Line Diagnostics From a Floppy Disk

1. Switch on the processor power or press B Reset.

2. This processor is a 6085-2 PCS.

   Y   N

   | Go to step 6.

3. Insert the disk labeled "System Bootfile #1" from the Off-Line Diagnostics, Version 3.0, into the floppy disk drive. Press <F2> for floppy boot.

NOTE: The Off-Line Diagnostics, Version 3.0 works only with the 6085-2 PCS.

4. Remove the disk from the floppy disk drive when cursor code [2222] is displayed. Insert the disk labeled "System Bootfile #2" into the floppy disk drive. After a few seconds, the booting process will continue.∎

■ 5. Insert the Workstation Diagnostics disk when the system prompts you and press <Return>. Go to step 7.

6. Insert the Off-Line Diagnostics System Bootfile Disk into the floppy disk drive. Press <F2> for floppy boot. Insert the Workstation Diagnostics disk when the system prompts you and press <Return>.

NOTE: Use the Off-Line Diagnostics, Version 1.5.2 for a 6085 PCS loaded with ViewPoint 1.x. Use the Off-Line Diagnostics, Version 2.0.1 for a 6085 PCS loaded with ViewPoint 2.x.

7. Type the number of the desired "Class of User" from the Logon Menu and press <Return>.

8. Type in the appropriate password, if necessary.

9. Type the number of the desired test and press <Return>.■

Loading the Off-Line Diagnostics From the Network

■ 1. Switch on the processor power or press B Reset.

2. Press **<F3>** when the boot softkeys are displayed.

3. Type the number of the desired option and press **<Return>** when the main menu is displayed.

4. Type the number of the desired "Class of User" from the Logon Menu and press **<Return>**.

5. Type the appropriate password, if necessary.

6. Type the number of the desired test selection, and press **<Return>**.

NOTE: *Press* **<STOP>** *to return to the previous menu.* ■

Notes:

Floppy Disk Tests

Figures 5-1 though 5-5 (inclusive) show sample windows of running the Floppy Disk Tests.

```
FLOPPY FORMAT


Do you still wish to continue?
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
FLOPPY FORMAT
Warning:  Formatting will destroy the contents of the diskette
```
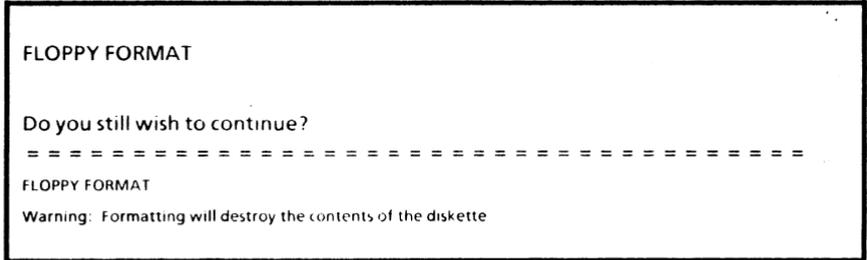
Figure 5-1   Format the Diskette as Pilot File System

```
FLOPPY HEAD CLEANING


Enter any key to continue:
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
FLOPPY HEAD CLEANING
Please insert a head-cleaning diskette and close the floppy drive door.
Head cleaning in progress.
```
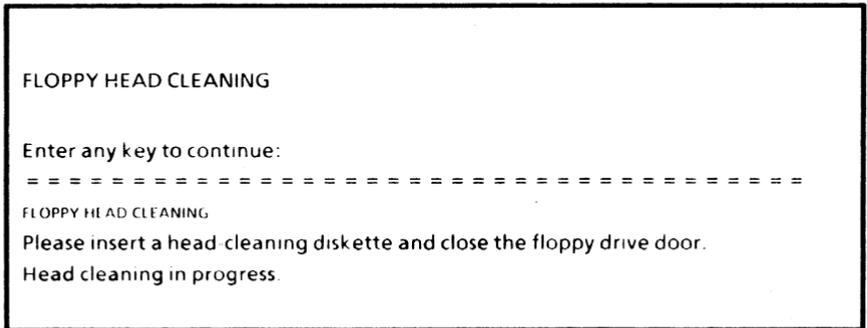
Figure 5-2   Clean Floppy Heads

FLOPPY STANDARD TEST

Hit any key to return to main menu:
= =
FLOPPY STANDARD TEST
Please insert floppy diskette labeled 'Workstation Diagnostics'
Note: Any other diskette will cause the diagnostic (last) cylinder to be
OVERWRITTEN.

This is a double-sided diskette.
TEST PASSED.
All done...

▌Figure 5-3 Floppy Standard Test▐

FLOPPY EXERCISER

Do you still wish to continue?
= =
FLOPPY EXERCISER
Warning: This test will destroy the contents of the diskette.

Figure 5-4 Floppy Exerciser Test

FLOPPY DISPLAY ERROR LOG

Enter any key to continue:

= =

FLOPPY DISPLAY ERROR LOG

= =

SUMMARY ERROR LOG

	Read Status	Seek/Verify	Read Sector	Write Sectors	Write Deleted Sectors
TIMES EXECUTED	0	0	16	0	0
Good Completion	0	0	16	0	0
Disk Changed	0	0	0	0	0
Not Ready	0	0	0	0	0
Seek Error	0	0	0	0	0
Deleted Sector	0	0	0	0	0
Record Not Found	0	0	0	0	0
Header Error	0	0	0	0	0
Data Error	0	0	0	0	0
Data Lost	0	0	0	0	0
Write Protected	0	0	0	0	0
Other Error	0	0	0	0	0

Figure 5-5 Display Floppy Error Log

Floppy Disk Utility

Figures 5-6 shows a sample window of using the Floppy Duplication and Verification Facility.

```
Floppy Duplication And Verification Facility
    1 - Diskette Copy and Checksum Utility
    2 - Go To Previous Menu
Please enter selection: 1
Please specify action [ 1-Read Master  2-Make Copy  3-Calculate Checksum  4-Quit]:
```
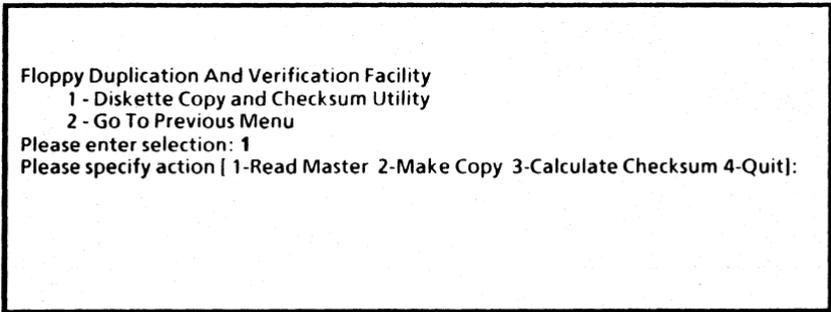
Figure 5-6   Diskette Copy and Checksum Utility

Keyboard / Display / Mouse / Beeper Tests

Figures 5-7 though 5-11 (inclusive) show sample windows of running the Keyboard, Display and Mouse Diagnostics.
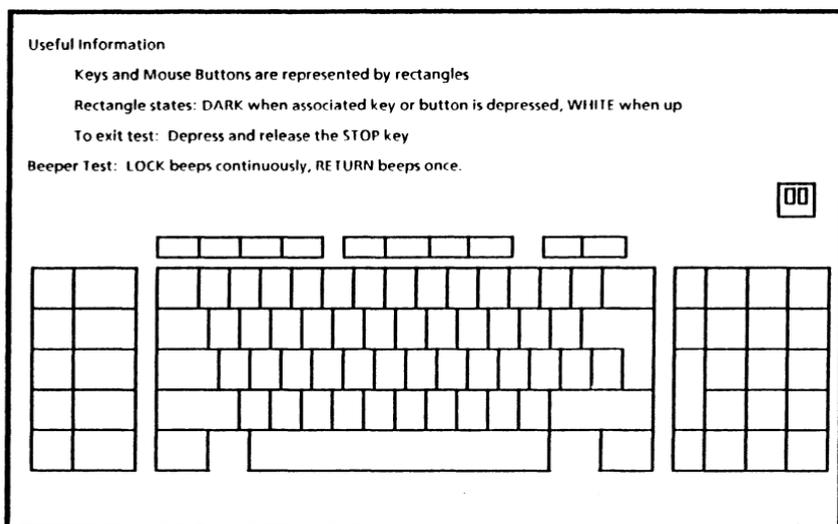
Figure 5-7   Keyboard, Mouse and Beeper Test

NOTE: Pressing the < Space Bar> inverts the color of the screen for all the keyboard tests, except the Keyboard, Mouse and Beeper Tests.

Figure 5-8 Borders and Data Field

NOTE: Pressing <SKIPINEXT> changes the blank Data Field to vertical lines, to horizontal lines, to crisscross lines, to diagonal lines, then back to the blank Data Field.
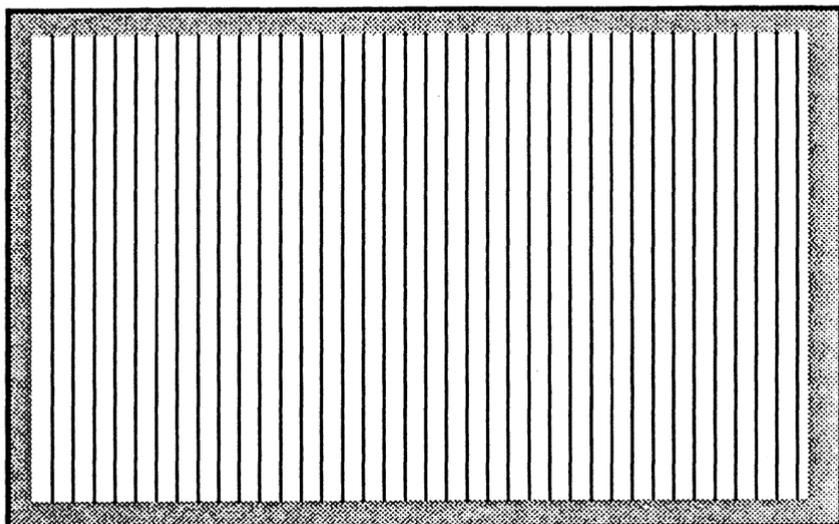
Figure 5-9   Vertical and Horizontal Bars

NOTE: Pressing <SKIPINEXT> changes the vertical bars to horizontal bars.

NEXT changes the line thickness
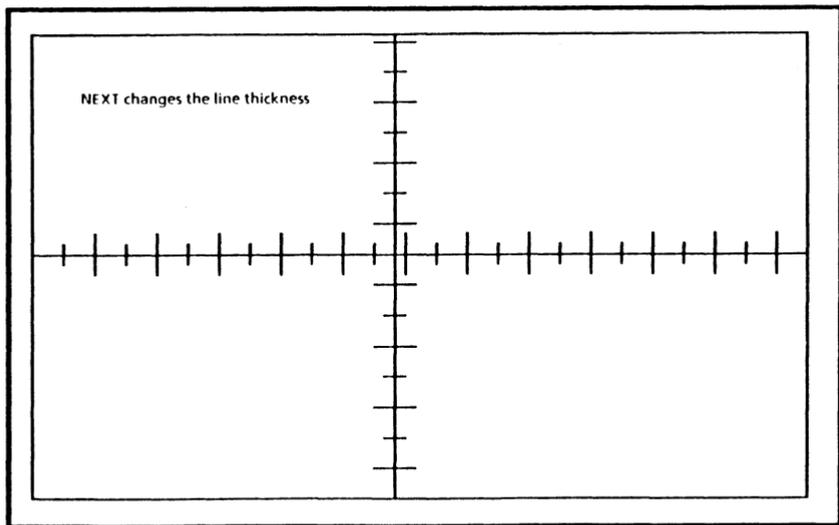
Figure 5-10   Cross Hair Pattern

```
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
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HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
```

Figure 5-11   Fill Screen With H's

NOTE: Pressing <SKIP/NEXT> changes the "H" pattern to an "E" pattern, from "E" to "@," from "@" to "@," from "@" to slanted lines, and then back to the "H" pattern.

Ethernet Tests

Figures 5-12 through 5-17 show sample windows of the Ethernet Tests.

```
Echo Test Property
Local Address = 0-666.2-856-391-424. = 1232B.25220211400B.
= 29AH.0AA411300H.
Echo Source = Local
Echo      Destination      =      0-666.2-613-688-939-569.      =
1232.46021400032061. = 29AH.2608C003431H.
Display Real-time feedback = Yes
Data Pattern: Incrementing
Minimum Packet Size = 512
Wait For a response: Yes


= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Feedback Key:
'1': Success to Echoing        '?': Unreached EchoBack Packet
'#': Delayed Packet            '~": CRC Error
':': Max length packet         '*': Unexpected packet


Hit STOP key to abort.
Echo Test was started
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Echo Test Results

Total number of packets attempted = 17401
Total number of good packets received = 17397
Number of timed-out packets = 3
Number of late packets = 0
Number of maximum length packets = 0
Number of CRC errors = 0
Number of unexpected packets = 0
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
```

Figure 5-12   Echo Test Window

Echo Test Property
Local Address = 0-666.2-856-391-424. = 1232B.25220211400B.
= 29AH.0AA411300H.
Echo Source = Local
Echo   Destination   =   0-666.2-613-688-939-569.   =
1232.46021400032061. = 29AH.2608C003431H.
Display Real-time feedback = Yes
Data Pattern: Incrementing
Minimum Packet Size = 2
Maximum Packet Size = 512
Wait For a response: Yes

Echo destination name or address = 0-666.2-613-688-939-569. =
1232.46021400032061. = 29AH.2608C003431H.

Figure 5-13   Echo Test Property Window

```
Offline Ethernet Diagnostic
    1 - Echo Test
    2 - Interface Test
    3 - Ethernet Datalink LSI diagnostics
    4 - Ethernet Internal Loopback Test
    5 - Communication Turnaround Test
    6 - Go To Previous Menu
Please enter selection: 2
Enter any key to continue:
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
internal loopback
Hit STOP key to abort.  OK
Interface Test Completed
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =

Total number of packets attempted = 70
Total number of good packets received = 69
Number of late packets = 4
Number of Overrun packets = 0
Number of Packets too long = 0
Number of CRC error = 0
Number of unexpected packets = 1
Number of retries = 0
Number of missed packets = 0
Percent packets transmitted that were received correctly = 98
```

Figure 5-14 Interface Test

```
Offline Ethernet Diagnostic
        1 - Echo Test
        2 - Interface Test
        3 - Ethernet Datalink LSI diagnostics
        4 - Ethernet Internal Loopback Test
        5 - Communication Turnaround Test
        6 - Go To Previous Menu
Please enter selection: 3
Enter Pass Count: 1
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =


= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
```

Figure 5-15   Ethernet Datalink LSI Diagnostics

```
Offline Ethernet Diagnostic
        1 - Echo Test
        2 - Interface Test
        3 - Ethernet Datalink LSI diagnostics
        4 - Ethernet Internal Loopback Test
        5 - Communication Turnaround Test
        6 - Go To Previous Menu
Please enter selection: 3
Enter Pass Count: 1
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
internal loopback
Hit STOP key to abort.


= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =

Total number of packets attempted = 70
Total number of good packets received = 69
Number of late packets = 4
Number of Overrun packets = 0
Number of Packets too long = 0
Number of CRC error = 0
Number of unexpected packets = 1
Number of retries ≐ 0
Number of missed packets = 0
Percent packets transmitted that were received correctly = 98
```

Figure 5-16   Ethernet Internal Loopback Test

```
Offline Ethernet Diagnostic
    1 - Echo Test
    2 - Interface Test
    3 - Ethernet Datalink LSI diagnostics
    4 - Ethernet Internal Loopback Test
    5 - Communication Turnaround Test
    6 - Go To Previous Menu
Please enter selection: 5
Did you connect the external loopback tool (Yes/No)?
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
The external loopback tool should be connected before starting this test.


= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
```
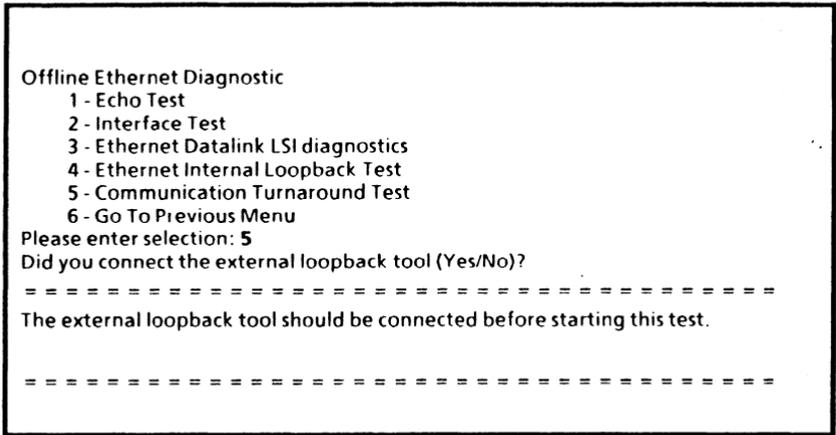
Figure 5-17 Communication Turnaround Test

Notes:

Confidence Test

Figure 5-18 shows a sample window of the Confidence Test while it is being executed.

```
Offline Diagnostics Version 1.2 Copyright (c) Xerox Corporation 1985, 1986 All
Running Rigid Disk Tests Selection: Confidence Test

Passes to run: 1
Run time: 2 mins 50 secs


= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Error detected


= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Page: 1500      Cylinder: 17      Head: 2      Sector: 8      Tries: 10      Failures: 10
Page: 1560      Cylinder: 18      Head: 0      Sector: 10     Tries: 10      Failures: 10
```

Figure 5-18   Confidence Test

Display Options Menu

This menu makes the various program displays available to the System Administrator or to Technical Support. (There are no selections for the User class.)

The System Administrator display selections are as follows:

TEST SELECTION
1 Display Error Log
2 Display Trace Table
3 Display Encountered Soft Errors
4 Go to previous menu

The Technical Support display selections are as follows:

TEST SELECTION
1 Display Error Log
2 Display Trace Table
3 Display Encountered Soft Errors
4 Rigid Disk Parameters
5 Go to previous menu

Display Error Log

If there is an entry in the log, the following menu is displayed:

DISPLAY ERROR LOG
  1 Earlier entry
  2 Later entry
  3 Same entry
  4 First entry
  5 Last entry
  6 Exit
Enter choice number:

Typing 1, Earlier entry, displays the error entry that was logged just before the error entry currently being displayed/examined. If there is no prior entry, the following message is displayed:

No earlier entries

Typing 2, Later entry, displays the error entry that was logged just after the current error entry. If there is no later entry, the following message is displayed:

No later entries

Typing 3, Same entry, redisplays the current error entry.

Typing 4, First entry, displays the first error entry in the Error Log.

Typing 5, Last entry, displays the last error entry in the Error Log.

Typing 6, Exit, returns control to the Display Options Menu.

When an error entry is selected, the following data is displayed on the screen:

- Entry Number–the error sequence number presently being displayed
- Unit Selected–the unit number where the error occurred
- Command Executed–the Input/Output command executed when the error occurred
- Given Parameters–the Cylinder/Head/ Sector/Sector count given
- Returned Parameters–the Cylinder/Head/ Sector/Sector count returned
- Single Buffer–whether a single or multi page buffer was used
- Requested Tries–the number of tries to be performed
- Retries Done–the number of tries that were performed
- Type of error detected–hard error or soft error
- Error Code–describes the failure

Figure 5-19 shows a sample Error Log window.

```
Entry number: 1
Unit Selected: 0
Command Executed: VerifyHeader/ReadLabel/ReadData[
Given Parameters: Cylinder: 8  Head: 4  Sector: 11  Sector count: 64
Returned Parameters: Cylinder: 8  Head: 4  Sector: 12  Remaining sectors: 63
Single buffer: TRUE
Requested Tries: 10      Retries done: 9
Hard error detected
Error code: 8
```

Figure 5-19   Sample Error Log Window

After the above is displayed, the user is then prompted with:

More (Yes/No):

If No is entered, the program accepts a new menu selection. If Yes is entered, the program displays status information.

At this point the program accepts a new menu selection.

When you exit Display Error Log, control is returned to the Display Options menu, which will be redisplayed.

Display Trace Table

If there is an entry in the table, the following menu is presented to the user:

Display Trace Table
1 Earlier entry
2 Later entry
3 Same entry
4 First entry
5 Last entry
6 Exit
Enter Choice Number:

A user can examine the entries in the trace table by selecting the appropriate commands in the menu.

Selecting 1 displays the entry that was logged just before the entry currently being displayed. If there is no prior entry, the following message is displayed:

NO EARLIER ENTRIES

Selecting 2 displays the entry following the last entry shown. If there is no later entry, the following message will appear on the screen:

NO LATER ENTRIES

Selecting 3 redisplays the current entry.

Selecting 4 displays the first entry in the table.

Selecting 5 displays the last entry in the table.

Selecting 6 returns control to the DISPLAY OPTIONS menu.

Pressing <STOP> returns to the previous menu, the DISPLAY OPTIONS menu.

Whenever an invalid number or character is entered, the following error message appears:

No such option

When a trace table entry is selected the following data is displayed on the screen:

Entry Number: <Entry sequence number presently being displayed>
Unit Selected: <the unit number>
Command Executed: <the Input / Output command executed>
Given Parameters: <the Cylinder/Head/ Sector/Sector count given>
Returned Parameters: <the Cylinder/Head/ Sector/Sector count returned>
Single buffer: <whether a single or multi page buffer was used>
Requested Tries: <the number of tries to be done>
Retries done: <the number of retries that were done>

Figure 5-20 shows a sample Trace Table Window.

Entry number: 1

Unit Selected: 0

Command Executed: VerifyHeader/ReadLabel/ReadData[

Given Parameters: Cylinder: 0   Head: 4   Sector: 11   Sector count: 2

Returned Parameters: Cylinder: 0   Head: 4   Sector: 13   **Remaining sectors:** 0

Single buffer: TRUE

Requested Tries: 10   **Retries done:** 0

Figure 5-20 Sample Trace Table Window

After the above is displayed, the user is then prompted with:

More (Yes/No):

If a No is entered, the program accepts a new menu selection.

If a Yes is entered, the program will display the following status information shown in Figure 5-21.

Bit	Status	State	Bit	Status	State
00	Operation Complete	TRUE	00	Sector not found	FALSE
01	Operation in progress	FALSE	01	Header CRC error	FALSE
02	Drive ready	TRUE	02	Label address mark error	FALSE
03	Error detected	FALSE	03	Label ID Error	FALSE
04	Disk DMA Timeout	FALSE	04	Label Verify Error	FALSE
05	Illegal operation	FALSE	05	Label CRC error	FALSE
06	Write Fault	FALSE	06	Data address mark error	FALSE
07	Display Operation block error	FALSE	07	Data ID error	FALSE
08	Protocol Violation	FALSE	08	Data Verify Error	FALSE
09	Fifo Error	FALSE	09	Data CRC Error	FALSE
10	Illegal Cylinder	FALSE	10	Not used	Spare
11	Track 00	TRUE	11	Not used	Spare

Figure 5-21   Status Information

At this point the program accepts a new menu selection.

Display Encountered Soft Errors

If soft errors exist, they are displayed on the screen for examination. The following information is displayed for each error:

Page: <the failing page number>
Cylinder: <the failing cylinder number>
Head: <the failing head number>
Sector: <the failing sector number>
Error count: <the number of times that page failed>

Figure 5-22 shows a sample error display:

```
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
ERROR DISPLAY

Page: 133     Cylinder: 2      Head: 0     Sector: 5     Error count: 3
Page: 2045    Cylinder: 30     Head: 2     Sector: 12    Error count: 1
```

Figure 5-22 Sample Error Display

The maximum number of errors displayed at a time is fifteen. If there are more than 15 errors to be displayed the user is prompted with:

More (Yes/No):

If the user enters No, the program returns to the Display Options menu.

If the user enters Yes the program keeps on displaying the encountered soft errors until none are left. Then it prompts the user with:

Enter any key to continue:

When the user enters a character the program returns to the Display Options menu.

When Display Encountered Soft Errors is exited, control is returned to the Display Options menu, which will be redisplayed. No error codes are involved.

Rigid Disk Parameters

Figure 5-23 shows a sample of the Rigid Disk Parameters option:

```
Rigid Disk Parameters

First unit: 0              Last unit: 0
First cylinder: 0          Last cylinder: 479
First head: 0              Last head: 7
First sector: 0            Last sector: 15
```

Figure 5-23 Rigid Disk Parameters

Surface Verification

Users must specify the pass-count when presented with the following prompt:

Passes to run:

On-line help text displayed when a question mark (?) is entered:

Each pass runs approximately: <xx-min yy-sec>
The supported pass-count is 1 through 32000.

While Verify Disk Surface is running, test parameters and diagnostic data are displayed on the screen. Following are some examples of typical displays a user is likely to encounter while running this test:

Passes to run: <PassCount> Remaining passcount: <RemainingPassCount>

When a soft error is encountered , it is displayed in the following format:

Page: 133 Cylinder: 2 Head: 0 Sector: 13 Tries: 10 Failures: 4

Verify Disk Surface tests for soft as well as hard errors. When the test detects absolutely no errors, hard or soft, the following terminating message is displayed:

NO BAD PAGES

When soft errors were detected, the following message, in addition to the soft error messages, is displayed:

DONE

Rigid Disk Diagnostics indicate a FAILED status when a specified number of pages with hard and/or soft errors are found during the test, as shown in in Figure 5-24.

```
Enter any key to continue:
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Too many disk errors detected.

FFFF    FFFF    F  F    FFFF  FFF
F       F   F   F  F    F     F   F
FFFF    FFFF    F  F    FFFF  F   F
F       F   F   F  F    F     F   F
F       F   F   F  FFFF FFFF  FFF
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Bad Page Display
Page: 300    Cylinder: 9    Head: 0   Sector: 12    Error Count: 12

Failure code: 2
```

Figure 5-24   Display When Hard Errors are Encountered

New Disk Check Out

CAUTION
Use this procedure only under the direction of a Region Engineer (RE) or the Technical Support Center (TSC).

CAUTION
Use this program only to check disks that do not yet contain Bad Page Tables.

```
TEST SELECTION
    1 - Confidence Test
    2 - Display Options
    3 - Verify Disk Surface
    4 - New disk check out
    5 - Go To Previous Menu
Please enter selection: 4
WARNING! This test will destroy the data on the disk   Do you still want to continue?
(Y/N): Y
```

Figure 5-25 New Disk Check Out

The New Disk Check Out runs through different subtests when the user has specified the number of passes to run. It completes at a PASSED or FAILED status.

■The Self Describing Disk Page 14 is overwritten when the New Disk Check Out is performed. The short Format disk subtest within the New Disk Check Out does not write the rigid disk parameters to Page 14 of the rigid disk drive.

After the New Disk Check Out has been run, you must perform the Format Disk routine to write the rigid disk type and parameters to Page 14.■

Rigid Disk Utilities

The main utility menu appears following the initial prompt. If the user class is "Normal User," the menu selections are as as follows:··

Formatter, Scavenger, and Bad Page Utility
1   Run Physical Volume Scavenger
2   Bad Page Utilities
3   Head Retraction
4   Go To Previous Menu ▌
Please enter selection:

For the other user classes (System Administrator and Technical Support), the menu selections are:

Formatter, Scavenger, and Bad Page Utility
1   Format Rigid Disk
2   Run Physical Volume Scavenger
3   Bad Page Utilities
4   Head Retraction
5   Go To Previous Menu ▌
Please enter selection:

Format Rigid Disk

Figure 5-26 shows a sample window of Formatting the Rigid Disk:

```
Formatting Information

    Number of passes: 10          Preformat Bad Page Table: Unformatted Disk
    Number of retries per pass: 1  Page Count: 0
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Formatting . . . Completed
Creating Pilot volume named "RD0"   . Completed
21399 Marked Bad



= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
    Page - Number:        Cylinder     Head      Sector     Volume
        21399               167          1          7       Unknown
```

Figure 5-26   Format Rigid Disk

Run Physical Volume Scavenger

Figure 5-27 is a sample window of Running the Physical Volume Scavenger:

```
Formatter, Scavenger, Bad Page Utilities
    1 - Format Rigid Disk
    2 - Run Physical Volume Scavenger
    3 - Bad Page Utilities
    4 - Head Retraction
    5 - Go To Previous Menu
Please enter selection: 2

= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Scavenging . . . Completed
No problem found
```

▌Figure 5-27   Run Physical Volume Scavenger ▌

Bad Page Utilities

The following is a sample window of the Bad Page Utilities menu:

```
Bad Page Utilities
     1 - Display Bad Page Table
     2 - Scan Disk For New Bad Pages
     3 - Manual Entry of Bad Pages
     4 - Page Scavenger
     5 - Fix Bad Page Headers
     6 - Reset Bad Page Table
     7 - Test Bad Pages
     8 - Go To Previous Menu
Please enter selection:

= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =




```
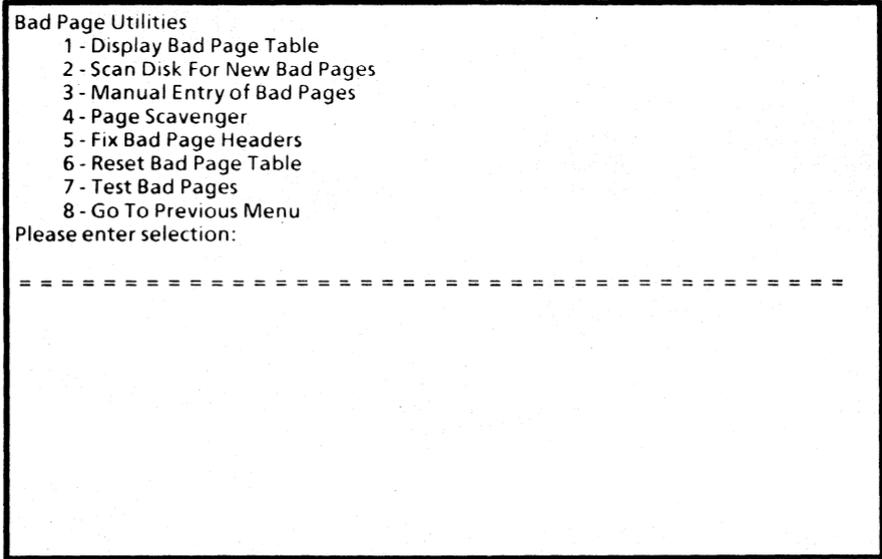
Figure 5-28   Bad Page Utilities

Display Bad Page Table

The following is a sample window of Displaying the Bad Page Table:

```
Bad Page Utilities
    1 - Display Bad Page Table
    2 - Scan Disk For New Bad Pages
    3 - Manual Entry of Bad Pages
    4 - Page Scavenger
    5 - Fix Bad Page Headers
    6 - Reset Bad Page Table
    7 - Test Bad Pages
    8 - Go To Previous Menu
Please enter selection:

= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Please enter, inclusively, a number between 1 and 8



= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Bad page list:
21399
```

█ Figure 5-29   Display Bad Page Table █

Scan Disk For New Bad Pages

The following is a sample window of Scanning the Disk for New Bad Pages:

```
Scan Count Information

    Desired Scan Count: 1
    Scans Completed: 0              New Bad Page Count: 0

= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Scanning disk for new bad pages .  .
Completed


= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Bad page list: No bad pages found
```
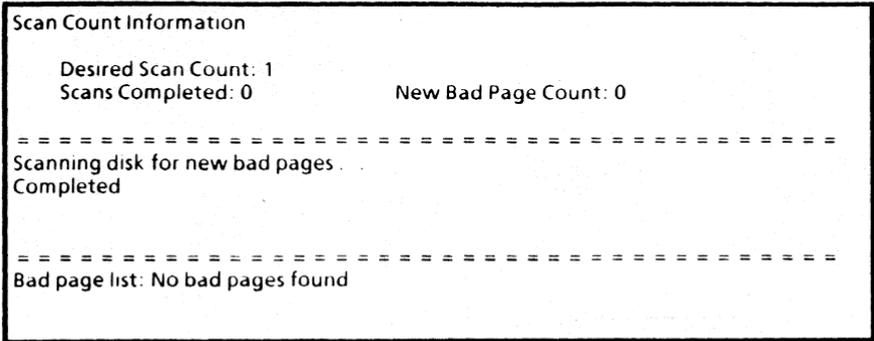
Figure 5-30 Scan Disk for New Bad Pages

Manual Entry of Bad Pages

The following is a sample window of the Manual Entry of Bad Pages menu:

```
Manual Entry of Bad Pages
    1 - Enter By Page Number
    2 - Enter By Manufacturer's Error Map
    3 - Go To Previous Menu
Please enter selection:


= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
```
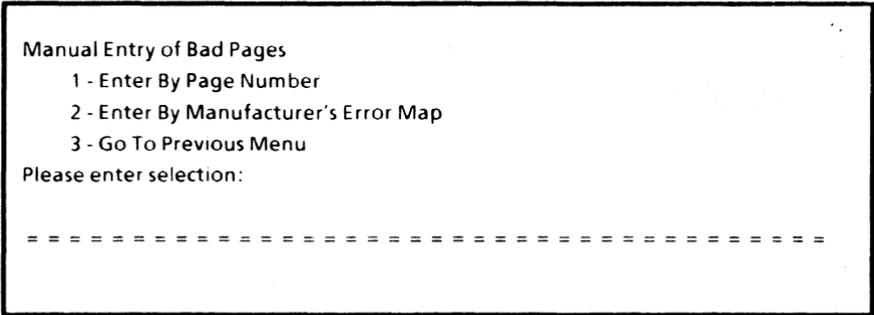
Figure 5-31 Manual Entry of Bad Pages

Enter by Page Number

The following is a sample window of Entering
Bad Pages by Page Number:

```
Manual Entry of Bad Pages
      1 - Enter By Page Number
      2 - Enter By Manufacturer's Error Map
      3 - Go To Previous Menu
Please enter selection: 1
More to go? Y
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
21398 Marked Bad


= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
    Page - Number:       Cylinder     Head      Sector      Volume
        21398              167          1          5        Unknown
```

Figure 5-32 Enter by Page Number

Enter by Manufacturer's Error Map

The following is a sample window of Entering Bad Pages by the Manufacturer's Error Map:

```
Disk Error Map Information                                    ·.

    Cylinder 0               Bytes From Index: 0
    Head 0                   Length of Bad Spot In Bytes: 0

Cylinder
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Please enter the data from the manufacturer's error map as prompted.
```

Figure 5-33 Enter by Manufacturer's Error Map

Page Scavenger

The following is a sample window of the Page Scavenger:

```
Bad Page Utilities
     1 - Display Bad Page Table
     2 - Scan Disk For New Bad Pages
     3 - Manual Entry of Bad Pages
     4 - Page Scavenger
     5 - Fix Bad Page Headers
     6 - Reset Bad Page Table
     7 - Test Bad Pages
     8 - Go To Previous Menu
Please enter selection:

= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Last selection menu was: 3


= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
   Page - Number:        Cylinder     Head      Sector     Volume
       21397                167          1          5       Unknown
          Page repaired
          User action:  Reboot volume with the offending page
```

Figure 5-34   Page Scavenger

Fix Bad Page Headers

The following is a sample window of Fixing the Bad Page Headers:

```
Broken Page Information

    Page - Number: 21398        Header:          Data:

Please select Option [ 1-Abort, 2-Review Track Status, 3-Continue]: 3
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Saving data on track ... Completed


= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
  Page - Number:    Cylinder   Head    Sector    Volume      Save-Status
     21392            167        1        0       Unknown    Good Completion
     21393            167        1        1       Unknown    Good Completion
```

Figure 5-35 Fix Bad Page Headers

Reset Bad Page Table

The following is a sample window of Resetting the Bad Page Table:

▌CAUTION
This is potentially a destructive test. ▌

```
Bad Page Utilities
    1 - Display Bad Page Table
    2 - Scan Disk For New Bad Pages
    3 - Manual Entry of Bad Pages
    4 - Page Scavenger
    5 - Fix Bad Page Headers
    6 - Reset Bad Page Table
    7 - Test Bad Pages
    8 - Go To Previous Menu
Please enter selection:

= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Original bad page table saved
Creating Pilot volume named "RD0"    Completed


= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Bad page list:
21397    21398    21399
```

▌Figure 5-36 Reset Bad Page Table▌

Test Bad Pages

The following is a sample window of Testing Bad Pages:

```
Bad Page Utilities
    1 - Display Bad Page Table
    2 - Scan Disk For New Bad Pages
    3 - Manual Entry of Bad Pages
    4 - Page Scavenger
    5 - Fix Bad Page Headers
    6 - Reset Bad Page Table
    7 - Test Bad Pages
    8 - Go To Previous Menu
Please enter selection:

= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Original bad page table saved
Creating Pilot volume named "RD0" ... Completed


= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
    Page - Number:      Cylinder    Head      Sector     Volume
      21397              167         1          6         Unknown
    Number of passes: 10  Number of retries per pass: 1 Soft Errors: 0  Hard Errors: 0
```

■ Figure 5-37   Test Bad Pages ■

Head Retraction

Figure 5-38 is a sample window of retracting the rigid disk heads: ▮

```
Formatter, Scavenger, Bad Page Utilities
    1 - Format Rigid Disk
    2 - Run Physical Volume Scavenger
    3 - Bad Page Utilities
    4 - Head Retraction
    5 - Go To Previous Menu
Please enter selection: 4


= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
To be used before moving or shipping, this utility moves the rigid disk heads to a safe
landing zone prior to powering off the 6085.
If you choose to continue, you must power off the machine when requested.

Heads retracted, please power off the 6085 . . .
```

▮ Figure 5-38   Head Retraction ▮

System Configuration Utility

The Normal User selections of the System Configuration Utility are:

System Configuration Utility
1 - Set Configuration
2 - Show Configuration
3 - Go To Previous Menu
Please enter selection:

When the appropriate password is used, the System Administrator and Technical Support selections are:

System Configuration Utility
1 - Set RAM Bad Page
2 - Set Boot Device Parameters
3 - Set Default Boot Diagnostics Parameters
4 - Set Display Parameters
5 - Set Floppy Disk and Cartridge Tape Parameters
6 - Set Keyboard Parameters
7 - Set Memory Size
8 - Set PC and Other Option Boards Parameters
9 - Set Rigid Disk Parameters
10 - Set VM and Control Store Parameters
11 - Set Hardware Version Number
12 - Recalculate And Display EEPROM Checksum
13 - Read actual EEPROM contents and abort all modification
14 - Show modified EEPROM contents (in HEX format) to be written
15 - Show modified EEPROM contents to be written
16 - Write EEPROM with Manufacturing Defaults
17 - Write EEPROM
18 - Go To Previous Menu
Please enter selection:

Show Configuration

The following is a sample window of the User Level selection, Show Configuration.

```
    1 - Return To The Previous Menu
Enter selection choice: 1
= = = = = = = = = = = = = = = = = = = = = = = = = = = =
= = = = = = = = = = = = = = = = = = = = = = = = = = = =
                 CURRENT CONFIGURATION
     Keyboard:                U.S.
     Rigid Disk Drive:        20 MB - Model 3
     Memory:                  1.1 MB
     Floppy Disk Drive:       360 KB
     Network Connection:      Yes
     Cartridge Tape Drive:    Yes
     PC Option:               No
     Universal Option:        Not Present
     Automatic Diagnostics:   No
     Virtual Memory Size:     Twenty-three bits
```

■ Figure 5-39 Show Configuration ■

Set Configuration

The following are sample prompts of the User Level selection, Set Configuration. Refer to "System Configuration Utility" in Chapter 4, Off-Line Diagnostics for complete descriptions of each prompt.

▌ *NOTE: Level 2.0.1 Diagnostics must be used with machines that contain a Cartridge Tape Drive and/or a Removable Rigid Drive.* **▌**

1. Type the number corresponding to "U.S. Keyboard," and press < Return > .

2. Type the number corresponding to the type of rigid disk and press < Return > .

3. Type the number corresponding to the installed memory size (i.e., *1.1 MB)* and press < Return > .

4. Type the number corresponding to the Floppy Drive (i.e., *360 KB)* you have and press < Return > .

▌ 5. Type < Y > or < N > if you have a Cartridge Tape Drive or not. **▌**

6. Type < Y > or < N > if you are connected to an Ethernet network or not.

7. Type < Y > or < N > if you have the PC (Personal Computer) Option or not.

8. Type < Y > or < N > if you have a Universal Option or not. The Universal Options are LPO or SPO (Local Printer Option or Scanner/Printer Option).

9. Type the number corresponding to the number of bits needed for virtual memory (i.e., *Twenty-three bits*).

NOTE: If your customer has the PC Option and/or the LP Option, the virtual memory size should remain twenty-three bits. If your customer has the SP Option, change the virtual memory size to twenty-four bits.

10. Type **< N >** to Automatic Diagnostics.

11. Type **< Y >** to *"Do you want your workstation reconfigured with the options you have selected?"*

12. Type **< Y >** to the confirmation prompt.

■ 13. Type **< Y >** to *"Is this disk formatted?"*

NOTE: If you answer Yes to the above prompt, and the disk is formatted, a description of the rigid disk will be written to the EEPROM and to the SDD page of the rigid disk drive. If you answer No and the disk is not formatted, you will receive the following message:
Warning: Disk Error: Unable to write disk parameters to disk
The description of the rigid disk will only be written to the EEPROM at that time. After the System Configuration Utility is complete, the rigid disk must be formatted. After the rigid disk is formatted, the description of the disk will be written to the SDD page of the rigid disk drive.

14. Press **< any key >** to return to the System Configuration Utility options. ■

Set RAM Bad Page

This utility is available to System Administrators and Technical Support personnel. From the System Configuration Utility Menu, type **1** and press **<Return>** ·to select the Set RAM Bad Page Utility. Type **1** and press **<Return>** to select Set RAM Bad Page. Ensure words 1-26 are set to 0 (zero).

Press **<STOP>** to exit this utility.

```
Set RAM Bad Page
    1 - Set RAM Bad Page      2 - Return To The Previous Menu
Enter Decimal index (1-26)  0
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =



= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Bad Memory Page Map (in Decimal)

Word1  0    Word2  0    Word3  0    Word4  0    Word5  0
Word6  0    Word7  0    Word8  0    Word9  0    Word10 0
Word11 0    Word12 0    Word13 0    Word14 0    Word15 0
Word16 0    Word17 0    Word18 0    Word19 0    Word20 0
Word21 0    Word22 0    Word23 0    Word24 0    Word25 0
Word26 0
```

█ Figure 5-40   Set RAM Bad Page █

Set Boot Device Parameters

This utility is available to System Administrators and Technical Support personnel. From the System Configuration Utility Menu, type **2** and press **<Return>** to select the Set Boot Device Parameters Utility. Type **2** and press **<Return>** to enter Rigid Disk Drive as the Default Boot Device. Ensure your Boot Parameters are like Figure 5-40.

The following are the boot Device options
 1 - NONE   2 - Rigid Disk Drive   3 - Floppy Disk Drive
 4 - Ethernet   5 - New Boot Device 6 - Return To The Previous Me
Do you wish Icons at Boot (Y/N)? **Y**
= =

= =
Boot Parameters:
    Default Boot Device: Rigid Disk Drive
    Icons at Boot: Present
    Rigid Disk Boot: Allowed
    Floppy Disk Boot: Allowed
    Ethernet Boot: Allowed
    RS232C Boot : Not Allowed

Figure 5-41   Set Boot Device Parameters

Set Default Boot Diagnostics Parameters

This utility is available to System Administrators and Technical Support personnel. From the System Configuration Utility Menu, type **3** and press **<Return>** to select the Set Default Boot Diagnostics Parameters Utility. Type **3** and press **<Return>** to select No Boot Diagnostics.

```
Set Default Boot Diagnostics Parameters
1 - Set Boot Diagnostics to Short  2 - Set Boot Diagnostics to Long
3 - No Boot Diagnostics            4 - Return To The Previous Men
Enter selection choice 3
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =


= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Set Default Boot Diagnostics
    Default Boot Diag: None
```

▮ **Figure 5-42   Set Default Boot Diagnostics Parameters** ▮

Set Display Parameters

This utility is available to System Administrators and Technical Support personnel. From the System Configuration Utility Menu, type **4** and press < Return > to select the Set Display Parameters Utility. Type **1** and press < Return > to select that a display is present. Answer the prompts appropriately.

```
Set Display Parameters
    1 - Present                 2 - Not Present
    3 - Return To The Previous Menu

Screen is set to Black & White (Y/N):
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =


= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =

    Screen: Present
    Screen Type: Black & White
    Screen Type: Bit Mapped
    Screen Type: Small screen (B&W = 15 inch, Color = 13 inch)
```
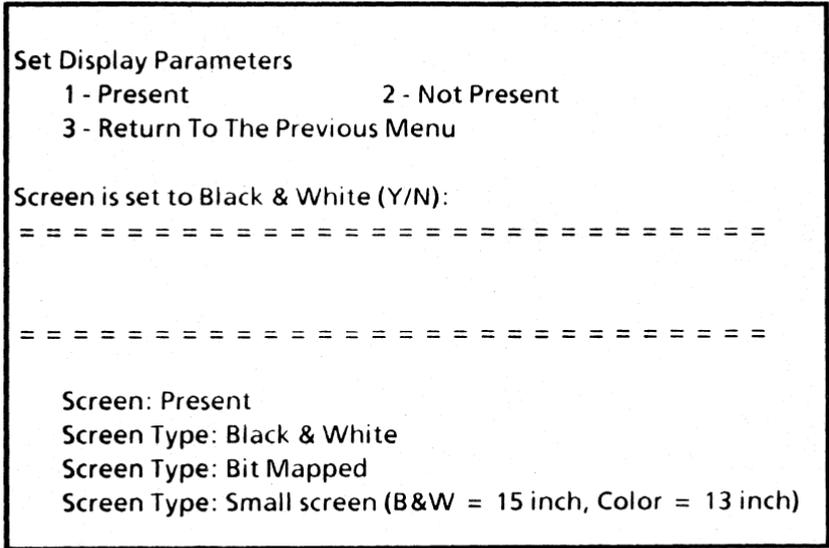
▌Figure 5-43 Set Display Parameters ▌

Set Floppy Disk and Cartridge Tape Parameters

This utility is available to System Administrators and Technical Support personnel. From the System Configuration Utility Menu, type 5 and press <Return> to select the Set Floppy Disk and Cartridge Tape Parameters Utility. Type the number corresponding to the floppy disk size and press <Return> for Drive Zero. Type the number corresponding to the cartridge tape drive, if applicable, and press <Return> for Drive One.

```
Set Floppy Disk Parameters
   1 - 360 KB              2 - 1.2 MB    3 - Cartridge Tape
   4 - Not Present         5 - Enter value for new disk Type
   6 - Default configuration  7 - Do not change
Make a selection for Drive Zero 7
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =


= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Press STOP to exit
   Floppy Drive Zero: 360 KB
   Floppy Drive One: Cartridge Tape
   Floppy Drive Two: NONE
   Floppy Drive Three: NONE
```

Figure 5-44 Set Floppy Disk and Cartridge Tape Parameters

NOTE: This utility is identical to the fourth and fifth prompts of the User level Set Configuration, which asks "Which floppy disk drive do you have?" and "Do you have a Cartridge Tape option?"

Set Keyboard Parameters

This utility is available to System Administrators and Technical Support personnel. From the System Configuration Utility Menu, type **6** and press **<Return>** to select the Set Keyboard Parameters Utility. Type the number corresponding to the language of your keyboard and press **<Return>**.

The following are the Keyboard choices
1 - No Keyboard   2 - U.S.   3 - European   4 - Japanese
5 - Lear-Siegler   6 - Enter new type   7 - Return to the Previous
Enter selection choice
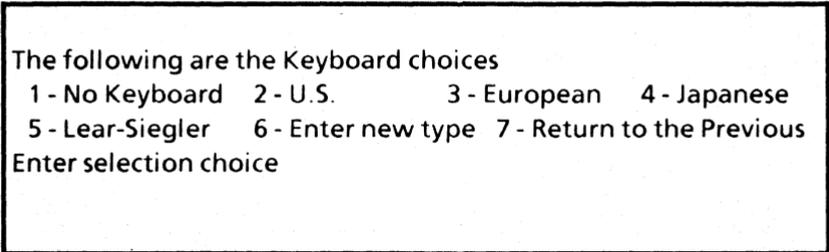
Figure 5-45   Set Keyboard Parameters

NOTE: Although this utility is identical to the first prompt of the User level Set Configuration, which asks "What language is your keyboard," selection numbers 1, 5, and 6 are additional choices.

Set Memory Size

This utility is available to System Administrators and Technical Support personnel. From the System Configuration Utility Menu, type 7 and press <Return> to select the Set Memory Size Utility. Type the number corresponding to the memory size and press <Return>.

```
Memory Types Supported
  1 - 1.1 MB Memory Setting (Standard Size)          2 - 1.6 MB Memory Set
  3 - 2.1 MB Memory Setting   4 - 2.6 MB Memory Setting    5 - 3.2 MB Memory Set
  6 - 3.7 MB Memory Setting   7 - Return To The Previous Menu
Enter selection choice
```

■Figure 5-46 Set Memory Size (Version 1.5.2, 2.0.1)■

∎6085 PCS   Check the PWB installed in the C2 slot at the rear of the processor to determine the installed memory size. If a Memory Matrix Label is not present, the system has 1.1MB. If a Memory Matrix Label is present, refer to table 5-1.∎

∎Table 5-1   MEB PWB Memory Matrix Label Markings∎

Grid location marked	Amount of memory represented in MB
None	1.6
A	2.1
B	2.6
C	3.2
D	3.7

The letter grids that are marked off on the Memory Matrix Label reflect how many Memory Expansion Banks have been occupied.

```
Memory Types Supported
 1 - 2.0 MB Memory Setting           2 - 4 0 MB Memory Setting
Enter selection choice
```

∎Figure 5-46A   Set Memory Size (Version 3.0)∎

∎6085-2 PCS   The DCM-2 PWB has 4.0 MB of memory installed.∎

NOTE: This utility is identical to the third prompt of the User level **Set Configuration**, which asks "What is the installed memory size?"

Set PC and Other Option Boards Parameters

This utility is available to System Administrators and Technical Support personnel. From the System Configuration Utility Menu, type **8** and press **<Return>** to select the Set PC and Other Option Boards Utility. Type **2** and press **<Return>** to select Set Universal Option Board Parameters. Set the parameters appropriately.

Set PC and Other Option Boards Parameters

1 - Set PC Option Board Parameters   2 - Set Universal Option Board Para

3 - Override Expansion Interrupt Allocations   4 - Return To The Previous Menu

Enter selection choice

= =

= =

Option Board Information

     PC Option Board: Not Present
         PC Option Hardware1: NONE
         PC Option Hardware2: NONE
     Universal Option 1: Not Present
     Attributes: 0
     Interrupt Allocation: 0
     Universal Option 2: Not Present
     Attributes: 0
     Interrupt Allocation: 0
     Universal Option 3: Not Present
     Attributes: 0
     Interrupt Allocation: 0

Figure 5-47 Set PC and Other Option Boards

NOTE: *This utility is identical to the sixth and seventl prompts of the User level* **Set Configuration** *which asks "Do you have a PC Option? [Y/N N" and "Universal Option."*

Set Rigid Disk Parameters

This utility is available to System Administrators and Technical Support personnel. From the System Configuration Utility Menu, type **9** and press **<Return>** to select the Set Rigid Disk Parameters Utility. Type the number for the rigid disk type you have and press **<Return>**.

```
Set Rigid Disk Type

  1 - Set Fuji Xerox Rigid Disks

  2 - Set US/RX Rigid Disks

  3 - Return To The Previous Menu

--Enter response number and press RETURN: 2
```

Figure 5-48 Set Rigid Disk Type

Type the number corresponding to Disk Type
Supported and press <Return>.

Disk Types Supported
    WARNING: Different Model (Mod) numbers for the same vendor drives are
    NOT equivalent, and are formatted for different capacities. Changing Mod
    numbers on the same vendor drives WILL REQUIRE REFORMATTING which
    will cause unrecoverable loss of the entire disk contents!

1 -10MB Mod 1-ST212	2 -10MB Mod 2-ST213	3 -20MB Mod 1-TM703
4 -20MB Mod 2-TM702	5 -20MB Mod 2-ST4026	6 -20MB Mod 3-Q530
7 -20MB Mod 4-ST225	8 -20MB Mod 5-MR322	9 -20MB Mod 6-D3126
10 -T20MB Mod A-TM703	11 -T20MB Mod B-TM702	12 -T20MB Mod B-ST4026
13 -T20MB Mod C-Q530	14 -T20MB Mod D-ST225	15 -40MB Mod 1-Q540
16 -40MB Mod 2-M1303	17 -40MB Mod 3-ST4051	18 -40MB Mod 4-ST251
19 -40MB Mod 5-MR535	20 -40MB Mod 6-D5146H	21 -T40MB Mod C-ST4051
22 -T40MB Mod D-ST251	23 -80MB Mod 1-M1325	24 -80MB Mod 2-ST4096
25 -80MB Mod 3-M2243AS	26 -80MB Mod 4-MK56FB	27 -100MB Mod 1-355-100
28 -190MB Mod 1-XT2190		
29 -Enter value for new disk type	30- Return To The Previous Menu	

Enter selection choice

■Figure 5-49   Disk Types Supported■

NOTE: *Although this utility is identical to the second
prompt of the User level Set Configuration,
which asks "Which rigid disk do you have?"
selection numbers 4 and 9 are additional
choices.*

Set VM and Control Store Parameters

This utility is available to System Administrators and Technical Support personnel. From the System Configuration Utility Menu, type **10** and press **<Return>** to select the Set VM and Control Store Parameters Utility. Set the parameters appropriately.

```
Set VM and Control Store Parameters
    1 - Set Virtual Memory Size      2 - Set Control Store Size
    3 - Return To The Previous Menu
Enter selection choice
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =

= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
VM and Control Store Settings
    Virtual Memory Size: 23 bits  = 16MB
    Control Store Size: 4K
```
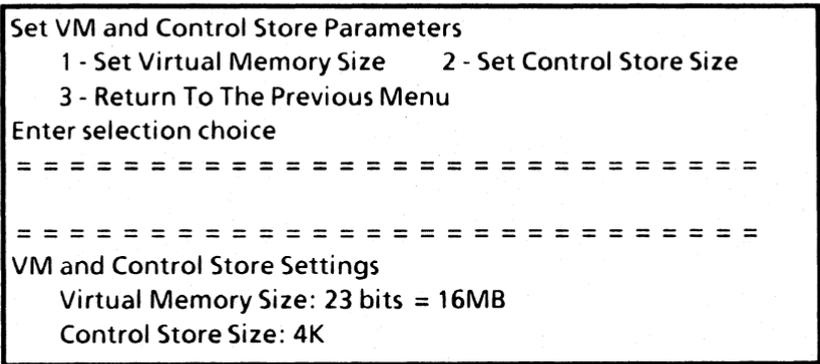
Figure 5-50   Set VM and Control Store Parameters

∎NOTE: *If the processor has the PC Option and/or the LP Option installed, the virtual memory size should remain 23 bits. Change the virtual memory size to 24 bits if the SP Option is installed.*

Set Control Store Size has three options: 4K, 8K, and 16K. The default is 4K. The SP Option and Versatec Expert Systems require 8K Control Store. The 6085-2 PCS requires 16K.∎

This utility is identical to the eighth prompt of the User level **Set Configuration**.

Set Hardware Version Number

This utility is available to System Administrators and Technical Support personnel. From the System Configuration Utility Menu, type **11** and press **<Return>** to select the Set Hardware Version Number Utility. Select the appropriate hardware version and press **<Return>**.

```
Set Hardware Version Number
 1 - B0/B1      2 - B2      3 - Set NEW Hardware Version     4 - Re
Select the Hardware Version
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =


= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Hardware Version Information

    Hardware Version Number: B2
```
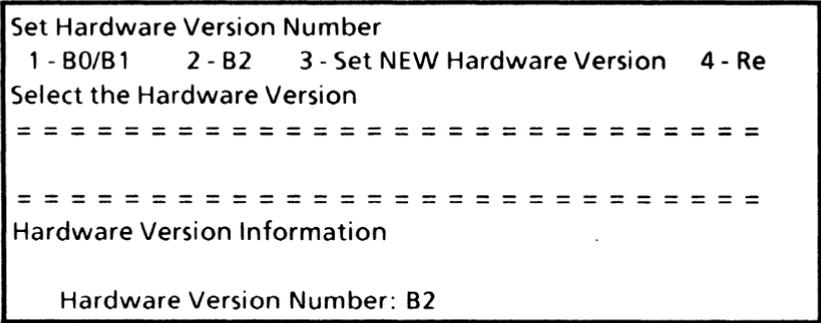
Figure 5-51   Set Hardware Version Number

Recalculate and Display EEPROM Checksum

This utility is available to System Administrators and Technical Support personnel. From the System Configuration Utility Menu, type **12** and press **<Return>** to select the Recalculate and Display EEPROM Checksum Utility.

Checksum Options
 1 - Checksum Override FALSE 2 - Checksum Override TRUE 3 - R
Enter selection choice

Figure 5-52 Recalculate and Display EEPROM Checksum

Read actual EEPROM contents and abort all modification

This utility is available to System Administrators and Technical Support personnel. From the System Configuration Utility Menu, type **13** and press **<Return>** to select the Read actual EEPROM contents and abort all modification Utility.

Read actual EEPROM contents
 1 - Confirm the Read EEProm Selection   2 - Return To The Prev
Enter selection choice

= =
The temporary EEProm changes will be erased. Select "1" if you still wish to continue.

Figure 5-53 Read actual EEPROM contents and abort all modification

Show modified EEPROM contents (in HEX format) to be written

This utility is available to System Administrators and Technical Support personnel. From the System Configuration Utility Menu, type **14** and press **<Return>** to select the Show modified EEPROM contents (in HEX format) to be written Utility.

```
Change All Locations Configurator
1 - Change Contents of EEProm  2 - Return To The Previous Menu
Enter selection choice
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =


= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
EEProm Contents
Word1 0001     Word2 0001     Word3 0001     Word4 00E1    W
Word7 0410     Word8 0132     Word9 FFFF     Word10 0080   W
Word13 1102    Word14 0202    Word15 0000    Word16 0000   W
Word19 0000    Word20 0000    Word21 0000    Word22 4000   W
Word25 0000    Word26 0000    Word27 0000    Word28 0000   W
Word31 0000    Word32 0000    Word33 0000    Word34 0000   W
Word37 0000    Word38 0000    Word39 0000    Word40 0000   W
Word43 0000    Word44 0000    Word45 0000    Word46 0000   W
Word49 0000    Word50 0000    Word51 0000    Word52 0000   W
Word55 0000    Word56 0000    Word57 0000    Word58 0000   W
Word61 0000    Word62 0000    Word63 0000    Word64 0000   W
```

Figure 5-54 Show modified EEPROM contents(in HEX format) to be written

Show modified EEPROM contents to be written

This utility is available to System Administrators and Technical Support personnel. From the System Configuration Utility Menu, type **15** and press **<Return>** to select the Show modified EEPROM contents to be written Utility.

```
   1 - Return To The Previous Menu
Enter selection choice 1
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =


= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
EEPROM Contents
EEPROM Version Number: 1       Ram Version Number: 1          Bad Page  Versi
Default Boot Device: Rigid Disk  Default Icons: Present        Rigid Disk Boot:
Floppy Disk Boot: Allowed       Ethernet Boot: Allowed        DTE Booting: N
Screen: Present                 Screen Type: 19 inch Black & White, Bit Mappe
Xalignment: 1                   Yalignment: 16                Current Keyboa
Sectors per track: 16           Heads per cylinder: 4         Cylinder per dri
Reduce drive current Cyl: 65535  Precompensation Cyl: 128     Rigid Disk: 40M
Landing Zone: 0                 RPM: 3600                     VCM Disk: No
Floppy Drive Zero: 360 KB       Floppy Drive One: Cartridge Tape
Floppy Drive Two: Not Present   Floppy Drive Three: Not Present
Hardware Version Number: B2     Checksum: 95CEH               Inverted Checks
Memory Size: 1.1 MB            Virtual Memory Size: 8MB      Control Store Si
Default Boot Diag: NONE         Default Diagnostics: NORMAL  DCE device Typ
DCE attributes: 0               DTE device Type: 0            DTE attributes:
PC Option Board: Not Present    PC Option Hardware1: NONE    PC Option Hard
Universal Option 1: Not Present  Attributes: 0                Interrupt Alloca
Universal Option 2: Not Present  Attributes: 0                Interrupt Alloca
```

∎Figure 5-55 Show modified EEPROM contents to be written∎

Write EEPROM with Manufacturing Defaults

This utility is for use by Manufacturing only.

Write EEPROM

This utility is available to System Administrators and Technical Support personnel. From the System Configuration Utility Menu, type **17** and press **<Return>** to select the Write EEProm Utility. Type **1** and press **<Return>** to Confirm the Write EEPROM Selection. Then type **Y** to confirm the new EEPROM values.

```
Write EEPROM
1 - Confirm the Write EEPROM Selection    2 - Return To The Prev
Booting will use new EEPROM values.  Do you still wish to
continue? (Y/N):
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
The temp EEProm image will be written to the REAL EEProm.
Select "1" if you wish to continue.
```

Figure 5-56 Write EEPROM

■Workstation On-Line Diagnostics provide another set of tools for servicing the 6085 PCS. On-Line Diagnostics provide peripheral diagnostic programs for testing the Display, Keyboard/Mouse, Floppy Disk Drive, Ethernet (communication interfaces), RS232C, 4045 Laser Printer Option, and 7650 Pro Imager. The On-Line Diagnostics are stored on the Rigid Disk, accessed through operating software, and menu-driven (desired tests are selected from a menu on the display). ■

NOTE: For information about Scanner On-Line Diagnostics, refer to Chapter 9, 7650 Pro Imager Diagnostics.

Initial On-Line Diagnostics Menu

■All of the available 6085 On-Line Diagnostics tests are shown on an initial menu. Individual tests are selected from the initial menu, and each test has a separate window for information and procedures. There are four individual tests (Echo Test, RS232C Test, Display Test and Keyboard Test), five individual floppy drive operations (Clean Read Write Heads, Standard Floppy Disk Test, Summary Error Log, Format Diskette, and Exercise Floppy Disk Test), and the 4045 On-line Diagnostics which is in the section for Other Tests. The Echo and RS232C tests also have separate property sheet windows that allow you to set different test parameters for these tests. ■

Echo Test (Test for Ethernet Communication Interfaces)

When this test is selected, the host processor transmits a sequence of packets and expects the remote processor to echo the packets. Each packet has a sequence number which determines the length and contents of the packet by a predetermined algorithm. The size of each packet, the contents of the packet, the rate of sending packets, and the time to wait for each packet to be echoed, are all set to default values - there is no requirement for the user to assign them.

If the ID # supplied for the test partner is the same as that of the host machine, the message *"Echo to self is not allowed"* appears in the command line, and the system waits for a new number to be entered. If the address for the host or test partner machine is not valid, the message *"Network address invalid"* appears until the correct address is entered. If the supplied Processor ID is zero, the message *"Processor ID is invalid or out of range"* appears in the command line, and the system waits for a new number to be entered. When the default packet size is not used and the value entered for the packet size is out of range, the message *"Packet Size is out of range"* appears.

After sending a packet and before sending the next packet, the host machine waits for its echo from the remote machine or waits a user-specified amount of time. After the Echo Test is executed, intermediate results are displayed approximately every 45 seconds, or, if **Real Time Feedback** has been selected, a character is displayed for every packet transmitted. In

either mode the final results are displayed after <STOP> is pressed.

NOTE: Without the display per packet, the test is able to operate at maximum speed and thus stress the hardware more effectively. For these reasons this is the recommended mode for running the Echo Test.

When the Real Time Feedback mode is used, different characters indicate the status of the transmission and response. With this mode a Real Time Feedback Key is displayed, which explains the meaning of each of the possible feedback characters.

RS-232-C Test

The RS-232-C Test uses an echo test to test the timing portion and modem associated with an RS-232-C port. The RS-232-C Test generates frames of information that are transmitted through the RS-232-C port. These frames return to the port through a modem placed in an analog loopback mode or a loopback tool. Each frame received is checked for validity of its content, its sequence number, and the condition of the transmitter and receiver loop.

During the test execution one or more of three informational messages about the Data Set Ready (DSR) or the Clear To Send (CTS) signals may appear. The three messages are *"Waiting for DSR," "DSR Signal is now on,"* and *"CTS signal is now on."* There are two error conditions with accompanying messages that may occur. If there is no RS-232-C hardware installed or in the event of a fatal hardware or

software failure, the message *"No Hardware"* appears. When a text parameter is entered with an invalid or out-of-range value, the message *"Invalid Parameter"* (followed by the parameter name) appears.

NOTE: The RS-232-C Test <u>always</u> requires a modem, modem eliminator or loopback tool connected to the RS-232-C port. To run the test with the modem in its normal transmitting mode, a second modem and telephone line are required (the remote modem would be placed in Digital Loopback). The modem provides a clock pulse which is necessary for bit-synchronous testing.

Display Test

The Display Test displays seven patterns on the Display. The first pattern is similar to the cross hairs found in a sighting lens, the second consists of a display filled with the letter H, the third and fourth consist of a display filled with the @ symbol (one pattern larger), the fifth consists of a set of parallel lines, the sixth is a rectangular grid, and the seventh blank. These patterns enable the user to check the alignment, focus, and intensity of the display.

Keyboard Test

In the Keyboard Test, the display will contain a picture of a keyboard and a mouse. Pressing any key will highlight the corresponding key in the picture. This test allows the user to verify the operation of the keyboard and mouse.

Floppy Operations

The floppy operations allow the user to test and analyze the operation of the Floppy Disk Drive, clean the read/write heads, or format a floppy diskette. A Diagnostic Floppy Disk is required to perform the Standard Floppy Disk Test, and the Exercise Floppy Disk Unit procedure requires a formatted diskette, which can be created with the Format Diskette Utility. The Clean Read Write Heads utility requires a Head Cleaning Kit.

A Summary Error Log is displayed after either the Standard Floppy Disk Test or the Exercise Floppy Disk Unit procedure has been run. Also, a separate Summary Error Log command can be used to display the results (a Summary Error Log) of the most recent execution of the Standard Floppy Disk Test or the Exercise Floppy Disk Unit procedure. Summary Error Log results show the total number of times that the various floppy disk operational commands (i.e., Read Status, Write Sectors, etc.) were executed along with number of times each of the various possible statuses (i.e., Good Completion, Not Ready, Data Error, etc.) occurred.

The Exercise Floppy routine thoroughly exercises the floppy disk unit, randomly reading and writing random data and verifying it. To protect against accidental destruction of information, the user is required to twice confirm the decision to run this routine.

▌Other Tests

The 4045 Online Diagnostics has two selections: Test Local Printer Option and Print Test Document. These selections test the local laser section of the scanner/printer option or the laser printer option.

The Test Local Printer Option selection tests the data register integrity by writing a pattern to the data-out register, looping back the pattern, and finally comparing the data-in register with the original pattern. This maintenance loopback does not require the scanner/printer connection. The logic circuits on the scanner/printer option and the laser printer option automatically isolate the scanner and printer connected to the ports. The use of a loopback tool is not required.

The Print Test Document selection sends a sample file to the laser printer to provide a hardcopy document for visual inspection. ▌

System software must be installed and loaded to perform On-Line Diagnostics.

NOTE: For information about Scanner On-Line Diagnostics, refer to Chapter 9, 7650 Pro Imager Diagnostics.

Enter the Workstation On-Line Diagnostics from the Logon Option Sheet or from the desktop by moving the cursor to the Command Line. Press and hold the left button on the mouse. A list of options appears. Moving the pointer vertically moves the highlighting in the option list. Position the highlighting on the word **Test**, and release the left button on the mouse. The On-Line Diagnostics Menu will appear.

NOTE: If On-Line Diagnostics is entered from the Logon Option Sheet, it may be necessary to resize the test window. If this is the case, move the cursor to the corner of the window you wish to stretch. Press and hold the right button on the mouse, move the mouse to the desired location for the new corner position, then release the right button.

Any of the tests on the On-Line Diagnostics Menu may be selected by pointing to the test with the cursor and pressing the left mouse button. Further instructions are included in the On-Line Diagnostics Menu (Figure 7-1).

On-Line Diagnostics	Close	□	☰

To begin a diagnostic test, select one of the following items.

Select [Close] to exit Online Diagnostics.

Test Items:

Echo Test

RS232C Test

Display Test

Keyboard Test

Floppy Operations:

Clean Read Write Heads

Standard Floppy Disk Test

Summary Error Log

Format Diskette

Exercise Floppy Disk Test

Other Tests:

Cartridge Tape Tests

4045 Online Diagnostics
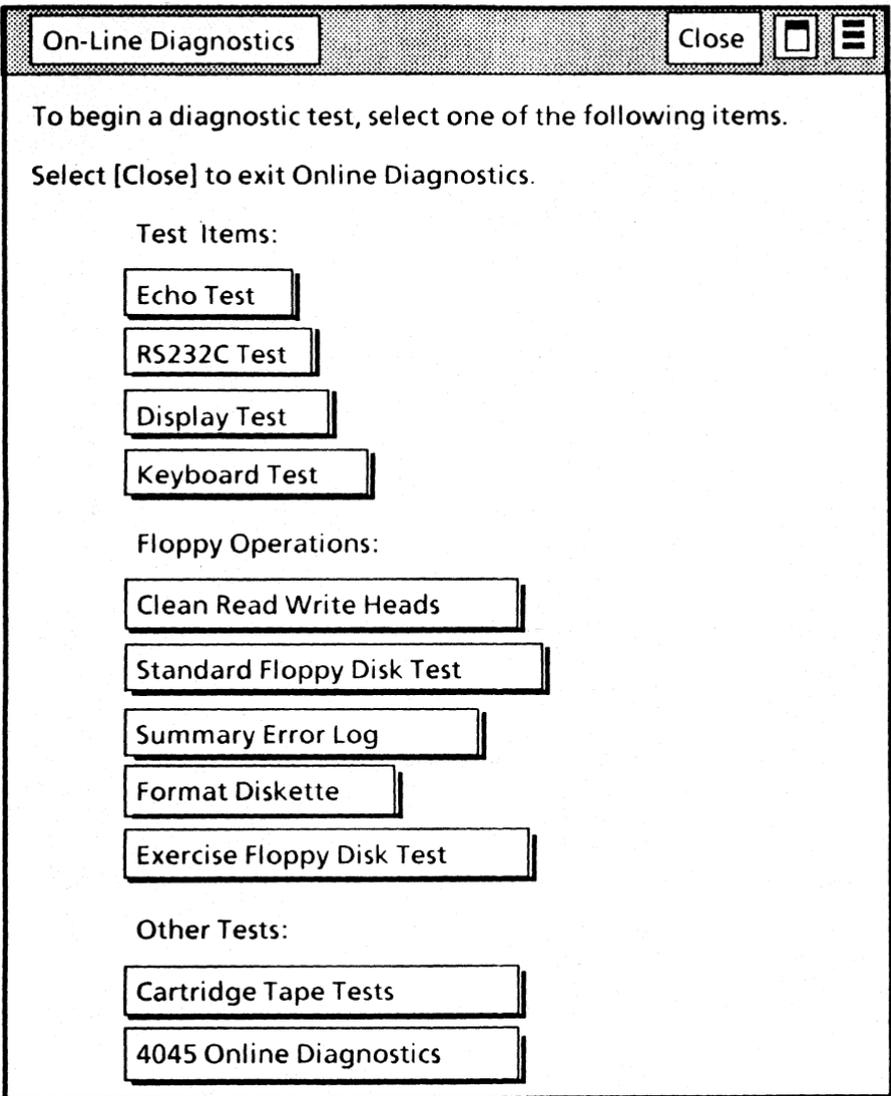
Figure 7-1 On-Line Diagnostics Menu

When a test is selected, that test window opens. If you do not wish to perform any of the tests listed on the menu, selecting [Close] returns the workstation to the state it was in before On-Line Diagnostics was invoked.

▌*NOTE:* *Other Tests, such as the Cartridge Tape Tests, will only appear if the system is configured for a Cartridge Tape.* ▌

Selecting [Show Test Properties] accesses a Property Sheet for the selected test if one is available. This allows the user to change various test parameters. (Suitable defaults are automatically provided when the On-Line Diagnostics session is begun.) Upon opening the window for a given test, the user will find instructions pertaining to that test and, if applicable, a summary of the current properties. For test parameters that the user can change, the property sheet choice parameters can be selected as options by using the mouse to highlight the desired option. If a text parameter is required, it can be treated as text by using character/line selection, deletion, and typed-in input. Once the desired changes have been made, selecting [Done] returns you to the test window. Selecting [Cancel] automatically returns all fields to their default settings and returns you to the test window.

Once a test has been selected, selecting [Run] starts the test. As the test is executed, results (if any) also appear in this window. At any time during the execution of a test, the user may press <STOP> and the current test will stop with applicable results in the test window.

Selecting [Close] returns to the On-Line Diagnostic Menu. Selecting [Close All] returns the workstation to the state it was in before On-Line Diagnostics was invoked.

Display Test

Selecting Display Test from the On-Line Diagnostics menu brings up the Display Test window, which gives you self-explanatory information and instructions (Figure 7-2). There is no property sheet associated with this test.

```
┌─────────────────────────────────────────────────────────────────────────────┐
│ Online Diagnostics Display Test    ║ Close ║ Close All ║ Run ║  [□] [≡]      │
├─────────────────────────────────────────────────────────────────────────────┤
│                                                                             │
│ OVERVIEW: The display test makes use of seven different test patterns, each of │
│ which may be displayed black on white, or white on black. A test pattern displayed │
│ black on white may be displayed white on black by pressing the <I> key, and vice │
│ versa. The <I> key operates as a toggle.                                     │
│                                                                             │
│ The seven test patterns used by the display test are as follows:            │
│ 1) The screen area is divided into sections, separated by broken lines.      │
│ 2) A character similar to a large, bold H is duplicated over the entire screen. │
│ 3) The character @ is duplicated over the entire screen.                     │
│ 4) A character similar to a large @ is duplicated over the entire screen.    │
│ 5) The left half of the screen displays vertical lines 1 cm apart.           │
│ 6) The screen area is divided by a rectangular target grid with line markings 0.5 cm │
│    apart.                                                                    │
│ 7) The entire screen is blank.                                              │
│                                                                             │
│ Select [Run] to start the display test.                                     │
│                                                                             │
│ Press <NEXT> to proceed from test pattern to test pattern in the above order. │
│                                                                             │
│ Press <STOP> to return to this window.                                      │
│                                                                             │
└─────────────────────────────────────────────────────────────────────────────┘
```

Figure 7-2 Display Test Window

Keyboard Test

As the Keyboard Test window (Figure 7-3) indicates, user interaction is required and the test is not terminated by pressing <STOP>. There is no property sheet for this test.

| Online DiagnosticsKeyboard Test | | Close | Close All | Run |

OVERVIEW: When the keyboard test is started, a representation of the keyboard and mouse is displayed over the entire screen. Each rectangular area on the keyboard representation corresponds to a key, and a single white square at the top of the screen represents the mouse. In addition, a single black square is presented in the upper-left corner of the screen. This black square is used to stop the keyboard test.

When [Run] is selected the keyboard test will begin. The keyboard and mouse will be represented on the screen, and the sound generator will be activated for approximately five seconds.

TESTING THE KEYBOARD: When a keyboard key is pressed, the corresponding representation should turn black and remain so until the key is released. Key representations that are black at any time other than when the corresponding key is pressed is indicative of hardware problems.

TESTING THE MOUSE: Moving the mouse should produce a corresponding movement by the white square representing the the mouse. Pressing the mouse buttons should produce black squares in corresponding positions on the represented mouse. The appearance of mouse buttons at any time other than when the actual mouse button is pressed, or an inverted mouse representation (black mouse with white buttons), is indicative of hardware problems.

STOPPING THE TEST: The keyboard test may be terminated at any time. This is done by moving the representation of the mouse over the black square in the upper-left corner of the screen and pressing either mouse button.

Figure 7-3 Keyboard Test Window

Echo Test (Test for Ethernet Communication Interfaces)

NOTE: Before running the Echo Test from a server or workstation to a workstation (6085, 8010 or 860), or from any processor on one net to any processor or 860 on another net, be sure to have the test partner processor ID number and network number.

When the Echo test is selected, the Echo Test window and its default or current test parameters will be displayed. The test can be run from this point, or the user can change the test parameters by setting new properties in the Echo Test Property Sheet.

The Echo Test Property Sheet is displayed by selecting Echo Test from the main menu and selecting [Show Test Properties] from the Echo Test window. The Echo Test Property Sheet can be scrolled to accommodate instances when all the properties cannot be viewed at once. The property sheet for the echo test (shown in Figure 7-5 with defaults selected) contains the following parameters:

Current Domain:Organization
This is a read-only parameter (cannot be changed by test user), the value of which is retrieved from local disk storage, if present, or else is determined by a Clearinghouse Service function.

Local network address
This is a read-only parameter displaying the Ethernet and processor IDs of the workstation being used to initiate the test.

Echo Source

This is a choice parameter that allows the user to select either the local workstation or a remote workstation to be the source of the transmissions. If **Remote** is selected, the **Echo Source name or address** appears on the property sheet and an entry must be typed. (The use of the Remote option is further explained later in this section.)

Echo Destination name or address

This is a text parameter, the default value of which is retrieved from local disk storage, if present. The user may enter/change it, but, if left blank, the Clearinghouse Service is used. It specifies the network address of the host which will echo back the transmissions of the source processor. Valid network addresses may be:

- a name (e.g., Tundra)
- a decimal number
  (e.g., 0-060.2A-652-126-818)
- an octal number
  (e.g., 74.25200000142B)
- a hex number (e.g., 3C.AA000062X)

If the local name only is specified (i.e., Tundra), then the organization and domain values used to find this machine are those which appear after **Current Domain:Organization** on the option sheet.

Real Time Feedback

This is a choice parameter selected only if the user selected **Local** as the **Echo Source**. If **Yes** is selected a single character will be displayed for each packet transmitted, indicating the status of the transmission and response. If **No** (the default) is selected there will be no display per packet. However, the Intermediate results

will continue to be displayed. This default option allows the test to operate at maximum speed and thus stress the hardware more effectively.

Data Pattern

This is a choice parameter, giving the user control over the data used in the Echo Test. The choices are all ones, all zeros, random or incrementing (the default) or constant.

Packet Size

This is a pair of text parameters to allow user control over the packet size. If a fixed packet size is desired, the **Minimum Packet Size** and **Maximum Packet Size** should both be set to the desired size. Otherwise the packet size will vary (incrementing from minimum to maximum) between the two values.

Wait for response before sending next packet and Delay between packets (milliseconds)

By default, the test waits for responses to the previous packet before sending the next. However, the user may override this (by selecting **No** for this parameter) and specify a fixed delay between packets via the **Delay between packets** parameter (which has a default value of 100 milliseconds).

Display Server List

This choice parameter allows the user to view the servers available in the **Current Domain:Organization**. The list is displayed in the Echo Test Property Sheet. The default is that NO server list is displayed.

Upon selecting **[Run]** the Echo Test is executed. Test results are displayed in the Echo Test

window. Approximately every 45 seconds, intermediate results will be displayed in the Echo Test window or, if **Real Time Feedback** has been selected, a character will be displayed for every packet expected. Figure 7-4 shows a test session after being stopped that had **Yes** selected for **Real Time Feedback**. At this point the user may [Close] the test or re-[Run] the test with or without altering test properties. Every time [Run] is selected, the current test parameters and feedback key (if **Real Time Feedback** is **Yes**) will be displayed.

To stop the test before the entire window is filled, press < STOP >.

Once the window is filled with the echoed packet responses or intermediate test results, the screen will scroll upwards. If the test parameters are not visible when the test is stopped, [**Show Test Properties**] can be selected to observe the current test parameters.

By selecting **Remote** for the **Echo Source** in the test property sheet, the user can direct an Echo test that will take place between any two machines on the connected internet. This facility can be used to narrow problems to a specific internetwork link, or to test the communication path between two machines that are distant from each other in a controlled, step-by-step manner.

Three processors are involved in a remote echo test. The first is the **test initiator**, the processor from which the user issues the Echo commands. The test initiator sends commands to the second machine used. The second

machine, which must always be a server, is the **remote system**. The remote system sends out echo requests to the third machine which is also specified in the test command. The third machine used is the **test partner**. The test partner responds to the remote system, which keeps statistics on the number of packets echoed successfully, the number of packets that were not echoed, and the number that were echoed back later than expected. Workstations, servers, and networked 860s can be used as test partners. CIUs (Communication Interface Units) cannot be used as test partners.

There is no time limit on a remote echo test. Only one echo test, either local or remote, can be controlled by a server at a time, and a server can function as a remote system for only one test initiator at a time. A server functions as a remote system, under control of a remote test initiator, completely transparent to the services or users of the server.

The message *"Remote echo could not be successfully executed"* is displayed if the test initiator server cannot successfully command the remote system to start the test because the remote system could not be contacted or was already in use for a different test initiator. A high-level communication protocol is used to communicate between the test initiator and the remote system. The remote system should be "closer" on the internet to the test initiator than the test partner. Control and command messages are passed between the test initiator and the remote system. The remote system should be on the same "side" of the internet connection under test as the test initiator to

ensure that the command and control message traffic does not interfere with the test data traffic.

Figure 7-4 illustrates what an Echo Test window would look like after completing a test that used the Local Echo Source and the Real Time Feedback options. Figure 7-5 is graphic reference of the Echo Test Property Sheet.

| Online DiagnosticsEcho Test | | Close | Close All | Run |

17-Jan-86 19:52:57
Echo Test Parameters:
Current Domain:Organization = OSBU North:Xerox
Local Network address = 0-060.2-852-129-141.
Echo Source = Local
Echo Destination name or address = 0-060.2-852-129-141
Data Pattern : Incrementing
Minimum Packet size: 2 bytes
Maximum Packet size: 512 bytes
Wait for response: Yes

Press <STOP> to stop test.
Echo Test started

Intermediate results:
208 packets attempted.
206 good packets received.
2 timed-out packets.
1 late packets.
1 bad packets.
99% of packets transmitted were received correctly.

Final results:
208 packets attempted.
206 good packets received.
2 timed-out packets.
1 late packets.
1 bad packets.
99% of packets transmitted were received correctly.

Done.

Figure 7-4 Echo Test Window

```
┌─────────────────────────────────────────────────────────────────────┐
│ ░Echo Test Property Sheet░        ░░░░░  │ Done │ │ Cancel │ [□] [≡] │
│─────────────────────────────────────────────────────────────────────│
│ Current Domain:Organization = OSBU North:Xerox                        │
│                                                                       │
│ Local Network address =   0-060.2-852-129-141 0                       │
│                           ·                                           │
│ Echo Source =   │▨Local│ Remote │                                     │
│                                                                       │
│ Echo Source name or address = │ 0-667.2-852-129-960.0 │ (remote only) │
│                                                                       │
│ Echo Destination name or address = │ 0-667.2-852-129-960.0 │          │
│                                                                       │
│ Real Time Feedback  │ Yes │▨No│  (local only)                         │
│                                                                       │
│ Data Pattern : │▨Incrementing│ All 0's │ All 1's │ Constant │         │
│                                                                       │
│ Minimum Packet size: │   2   │  (2 - 512 bytes)                       │
│                                                                       │
│ Maximum Packet size: │  512  │  (2 - 512 bytes)                       │
│                                                                       │
│ Wait for response before sending next packet │▨Yes│ No │              │
│                                                                       │
│ Delay between packets (milliseconds) │ 100 │ (only if NO wait for response) │
│                                                                       │
│ Display Server List  │▨Yes│ No │                                      │
└─────────────────────────────────────────────────────────────────────┘
```

Figure 7-5 Echo Test Property Sheet

RS-232-C Test

The RS-232-C test is designed to test the function and performance (reliability) of the RS-232-C interface on a workstation. Various options are available for the user to control the test. The property sheet for the RS-232-C test (shown in Figure 7-7 with defaults selected) allows the user to set up the following parameters:

Mode
This is a choice parameter, the default being **Bit Synchronous**.

Data Rate
This is a choice parameter, the default value is **1200**. (This parameter only appears when **Asynchronous** mode is selected.)

Set Data Pattern
This is a primarily a choice parameter, allowing the user control over the data used in the loopback test. The pattern may be **Incrementing** (the default), a **Constant, All 0's** or **All 1's**. If **Constant** is chosen then the user may enter the desired value in the associated text parameter. The value must be in the range 0 to 255 inclusive and will be 0 if left blank.

Set Packet Size
This is a pair of text parameters to allow user control over the packet size. If a fixed packet size is desired, the "Minimum Packet Size" and "Maximum Packet Size" should both be set to the desired size. Otherwise the packet size will vary (incrementing from minimum to

maximum) between the two values. Packet sizes do not apply to an asynchronous test.

Wait for Data Set Ready
This is a parameter allowing the test to behave correctly for all modems whether they raise DSR or not.

The selection and running of the RS-232-C test is very similar to the Echo test. The running of the RS-232-C Test requires either the installation of the Universal Loopback Tool (600T1656) on the RS-232-C port of the workstation or setting the modem or modem eliminator to loopback mode. If bit-synchronous mode is chosen, an external clock source is also required. Upon selecting [Run] the RS-232-C Test is executed. As the test is executed intermediate results appear in the RS-232-C Test window approximately every 45 seconds. At this point, the user may [Close] the test or re-[Run] the test with or without altering test properties. Each time [Run] is selected the current test parameters will be repainted in the window.

| Online DiagnosticsRS232C Test | Close | Close All | Run |

24-Aug-85 9:20 PM.
 RS232C Test Parameters:
Mode: Bit-Synchronous
Data Pattern: Incrementing
Minimum Packet size: 2 bytes
Maximum Packet size: 600 bytes
Wait for Data Set Ready: Yes

Please install loopback plug on RS232 port, or set modem to loopback.

24-Aug-85 9:20 PM.
 RS232C Test Parameters:
Mode: Bit-Synchronous
Data Pattern: Incrementing
Minimum Packet size: 2 bytes
Maximum Packet size: 600 bytes
Wait for Data Set Ready: Yes

Press <STOP> to stop test.
RS232C Test started

Intermediate results   (or final results if end of test)
100 packets sent OK.   (bit-synchronous only)
20000 bytes sent.
100 packets received OK. (bit-synchronous only)
20000 bytes received.
0 Device errors.
0 Transmit errors.   (displayed only if > 0)
0 Bad data.   (displayed only if > 0)
0 Missing Data.   (displayed only if > 0)
0 CRC errors.   (displayed only if > 0)

.Done

Figure 7-6 RS-232-C Test Window

RS232 Test Property Sheet		Done	Cancel	☐	☰

Mode | Asynchronous | Bit Synchronous |

Data Rate in bps: | 300 | 600 | 1200 | 2400 | 3600 | 4800 | 7200 | 96 |

(Asynchronous only)

Data Pattern | Incrementing | All 0's | All 1's | Constant |

Minimum Packet size: | 2 | (2 - 600 bytes)

Maximum Packet size: | 600 | (2 - 600 bytes)

Wait For Data Set Ready: | No | Yes |

Figure 7-7 RS-232-C Property Sheet

Floppy Operations

To run a floppy test or operation from the 6085 PCS, select the desired test or operation under **Floppy Operations** on the main On-Line Diagnostics menu. A window for the selected test or operation then appears. Follow the applicable display messages to run the selected test.

Clean Read Write Heads

This is an operational maintenance utility that is used periodically to assure functional integrity of the floppy disk drive. Note that a special head cleaning diskette must be used and, be sure to wait until the display asks for the cleaning disk before applying the solution to the disk. The window and command line give the user self-explanatory directions for using this utility.

Standard Floppy Disk Test

█ This is is a general test of the floppy disk drive and requires the diagnostic floppy diskette labeled 'Workstation Diagnostics'. The test is designed to begin with NO diskette in the drive. The user will be requested to insert the diskette when appropriate and confirm that he/she has inserted the diskette. If an incorrect diagnostic disk is used or a irrecoverable error condition exists, the message *"Error has occurred; Please call the*

CSC; *tell* **them** *the maintenance-panel code"* is displayed in the system message area. The cursor code indicates the nature of the fault. ▮

When the test is done, an error log (Summary Error Log) is displayed summarizing the test results.

```
┌─────────────────────────────────────────────────────┐
│ ▓ Online Diagnostics Standard Floppy Disk Test   ▓  │
│ ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓  │
├─────────────────────────────────────────────────────┤
│                                                     │
│ Please insert floppy diskette labeled 'Workstation  │
│ Diagnostics'.                                       │
│ Note:  Any other diskette will cause erroneous      │
│ results.                                            │
│ Please select CONFIRM when this is done.            │
│                                                     │
│ This is a double-sided diskette.                    │
│                                                     │
│ TEST PASSED.                                        │
│                                                     │
│ SUMMARY ERROR LOG                                   │
│                                                     │
│ 1 = Read Status                                     │
│ 2 = Seek/Verify                                     │
│ 3 = Read Sector                                     │
│                                                     │
└─────────────────────────────────────────────────────┘
```
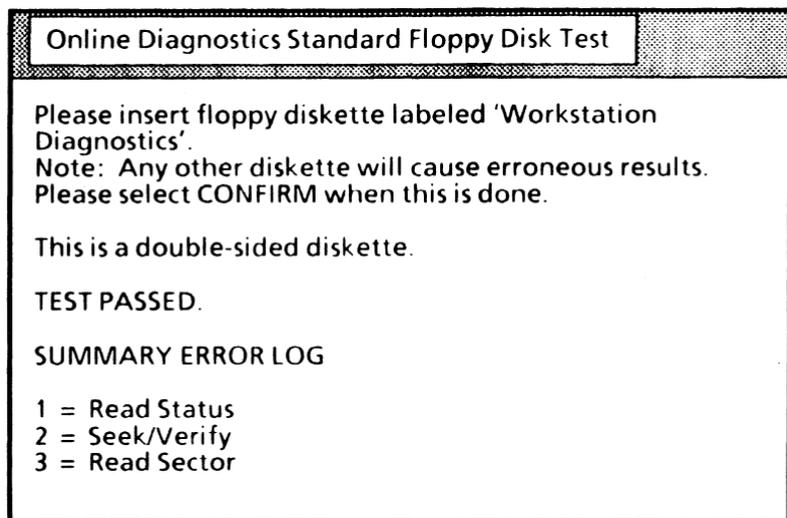
▮ **Figure 7-8 Standard Floppy Disk Test Window** ▮

Summary Error Log

This is a separate command that can be selected from the main menu to display the results (a Summary Error Log) of the most recent execution of the Standard Floppy Disk Test or the Exercise Floppy Disk Unit procedure (Figure 7-9). It is shown as a matrix of the number and type of test/exercise commands executed with the statuses that occurred for each command executed. The type of commands is represented by the top

horizontal line of column headings (i.e., Read Status, Write Sectors, etc.). The number of times each kind of command is executed is represented by the TIMES EXECUTED horizontal line. The status and errors are listed vertically in the left column (i.e., Good Completion, Not Ready, Data Error, etc.) with the numbers of times that each occurred correspondingly listed under the command heading numbers.

```
┌─────────────────────────────────────────────────────────┐
│  Online Diagnostics Summary Error Log                    │
│                                                          │
│  Select [Run] to display Log.                            │
│                                                          │
│  SUMMARY ERROR LOG                                       │
│                                                          │
│  1 = Read Status                                         │
│  2 = Seek/Verify                                         │
│  3 = Read Sector                                         │
│  4 = Write Sectors                                       │
│  5 = Write Deleted Sectors                               │
│      1    2    3    4    5                                │
│      4    1    1   63   14   TIMES EXECUTED               │
│      3    1    1   63   14   Good Completion              │
│      3    1    1   63   14   Disk Changed                 │
│      0    0    0    0    0   Not Ready                    │
│      0    0    0    0    0   Seek Error                   │
│      3    1    1   63   14   Deleted Sector               │
│      0    0    0    0    0   Record Not Found             │
│      0    0    0    0    0   Header Error                 │
│      0    0    0    0    0   Data Error                   │
│      0    0    0    0    0   Data Lost                    │
│      1    0    0    0    0   Write Protected              │
│      0    0    0    0    0   Other Error                  │
└─────────────────────────────────────────────────────────┘
```

Figure 7-9 Summary Error Log Test Window

Exercise Floppy

This routine thoroughly exercises the floppy disk unit, randomly reading and writing random data and verifying it. A formatted disk is required, and that disk should be a blank one that is created by using the Format Diskette utility. To protect against accidental destruction of information, the user is required to confirm the decision to run this routine by twice having to select [Confirm] in the system message area. If the user decides not to use the disk he/she may select [Cancel] in the system message area, change disks and select [Run] again.

The window and user interface for the Exercise Floppy routine is very similar to Standard Floppy Disk Test. If an irrecoverable error occurs, the exerciser stops with the message: *"A hard error has occurred. Check the error code and the Error Summary Log."*

Format Diskette

This utility can be used to format a floppy diskette with the standard Xerox format. Such diskette may then be used to run the Exercise Floppy procedure. To protect against accidental destruction of information, the user is required to confirm the decision to run this utility twice, as with the Exercise Floppy routine above.

The window and command line give the user simple, self-explanatory directions for using this utility. If formatting fails due to an irrecoverable error, the following message is reported in the Format Diskette window: *"Bad Track n. The diskette is bad and can't be used."*

▮Cartridge Tape Tests▮

```
┌─────────────────────────────────────────────────────────┐
│ ▐ Online Diagnostics Cartridge Tape Tests ▌             │
│ ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓          │
│                                                          │
│  ┌──────────┐                                            │
│  │ Format   ║    Tape Name  ┌──────────────────────────┐ │
│  └──────────┘               └──────────────────────────┘ │
│                                                          │
│   Maximum Number of Files  ┌──────────────────────────┐  │
│                            │          1000            │  │
│                            └──────────────────────────┘  │
│  ┌────────────────┐ ┌──────────┐ ┌─────────────┐         │
│  │ Reset Tension  ║ │ Verify   ║ │ Scavenge    ║         │
│  └────────────────┘ └──────────┘ └─────────────┘         │
│  ┌──────────────────────────────┐                        │
│  │ Display Bad Sector Table     ║                        │
│  └──────────────────────────────┘                        │
│ ┌─┬────────────────────────────────────────────────┬───┐ │
│ │-│                                                │ + │ │
│ └─┴────────────────────────────────────────────────┴───┘ │
│                                                          │
│                                                          │
│                                                          │
└─────────────────────────────────────────────────────────┘
```

▮Figure 7-10 Cartridge Tape Tests Window▮

▮*NOTE: Messages will display at the bottom of the window message area. Adjust the size of the window to see all the messages.*▮

Format

This operation formats the tape. A tape must be formatted before it can be written or read. During formatting, the tape is divided into 12 streams with 245 tracks per stream. There are 32 sectors per track with 512 bytes per sector. See Chapter 10 Cartridge Tape Diagnostics for more information.

During the Format operation, you will be asked to name the tape. The tape name can be up to 100 characters in length.

Formatting a tape takes approximately 45 minutes. During this time, the workstation is dedicated solely to the format operation. ▌

```
┌──────────────────────────────────────────────────────┐
│ ┌─────────────────────────────────────────┐          │
│ │ Online Diagnostics Cartridge Tape Tests  │          │
│ └─────────────────────────────────────────┘          │
│                                                        │
│  ┌─────────┐   Tape Name  ┌──────────────────────┐    │
│  │ Format  │              │                      │    │
│  └─────────┘              └──────────────────────┘    │
│    Maximum Number of Files  ┌──────────────────┐      │
│                             │         1000     │      │
│  ┌──────────────┐ ┌────────┐└──────────────────┘      │
│  │ Reset Tension│ │ Verify │ │ Scavenge │             │
│  └──────────────┘ └────────┘ └──────────┘             │
│  ┌─────────────────────────────┐                      │
│  │ Display Bad Sector Table     │                      │
│  └─────────────────────────────┘                      │
│ ─ ┌───────────────────────────────────────────┐  +    │
│   └───────────────────────────────────────────┘       │
│                                                        │
│  Formatting...                                         │
│                                                        │
└──────────────────────────────────────────────────────┘
```

▌Figure 7-11 Formatting a Cartridge Tape ▌

▮ Reset Tension

This utility conditions the cartridge tape. This includes resetting the tension of the tape around the spools. Run Reset Tension when:

- the tape is new (the Format Utility resets the tension automatically)
- the tape has been in storage
- the tape has had eight hours of use

Verify

This operation is a general test of the cartridge tape drive and requires the 6085 Diagnostic Data Cartridge. Any other tape will cause erroneous results. (The Diagnostic Data Cartridge contains diagnostic information on streams 6 and 7.)

This is a read-only test which verifies the tape drive operation. It reads the known data on streams 6 and 7 only.

Scavenge

This utility causes the internal structure of the tape to be rebuilt. This is necessary if the workstation has crashed with the tape drive open, or if the user has removed a tape from the drive before closing the window.

SUCCESSFUL REPAIR will be displayed when the scavenge completes successfully. If the scavenge is unable to repair the file, *UNSUCCESSFUL REPAIR* will be displayed. ▮

▌ Display Bad Sector Table

During a normal tape operation, locations on the tape, called "sectors," are occasionally found to be unusable. As these are discovered, they are added to the Bad Sector Table by the application software. This command can be used to see the current size of the table. A tape should not be used when the number of bad sectors approaches 100. A tape is no longer usable or recoverable when it reaches 256 bad sectors.

NOTE: Ensure a formatted tape is inserted in the cartridge tape drive before selecting this option. ▌

```
Online Diagnostics Cartridge Tape Tests

 Format    Tape Name   [                    ]

 Maximum Number of Files   [      1000      ]

 Reset Tension   Verify    Scavenge

 Display Bad Sector Table

-                                          +

 message area
```

▌Figure 7-12 Displaying the Bad Sector Table▌

4045 Online Diagnostics

To run the 4045 Online Diagnostics, select the test under the **Other Tests** section in the main Online Diagnostics menu. A window for the 4045 Online Diagnostics will appear.

To perform the test of the local printer option, select [Test local printer option]. This will initiate the test and upon successful completion, the message "Local printer option diagnostic test passed" will appear in the 4045 Online Diagnostic window. The scanner/printer device need not be connected. Connected devices do not need their power switched on.

Selection of the [Print test document] option in the 4045 Online Diagnostic window will send a prepared document to the 4045 laser printer. A message "Printing test document" will appear in the window and a message "completed successfully" will appear noting the completion of the test. ▮

Notes:

The following list provides a description of the individual cursor codes. It contains very few troubleshooting or repair analysis procedures.

The terms contained within this list are used by the developers, and are not intended to be fully understood by Service Representatives or Systems Analysts. This list should be considered additional reference material.

The "symbols" used in the following codes are explained below:

- "XX" indicates variable numbers of a cursor code, such as 76XX.

- Some codes appear as a sequential series of codes. These codes are denoted with a " + " after the code.

NOTE: The Boot Diagnostics Cursor Codes are located in Chapter 3 of this handbook.

Code	Description
XX45	(This code appears in a series of codes following the code 9999.) It signifies an unrecoverable disk error. The last three numbers of the cursor code series, concatenated, will indicate the bad page. For example, 26128 is the bad page of the following sequence: 9999, XX45, 223, 1919, 0, 26, 128.
0100	The boot code in the EProm is starting to run.
0149	The boot code in the EProm is attempting to fetch the initial microcode from the boot

Code	Description
	device. This code should never hang forever if the hardware is alive and well; it should be followed by either 150 (success) or 151 (failure).
0150	The initial microcode has been successfully fetched from the boot device and has started execution.
0151	The initial microcode cannot be fetched from the boot device. Possible causes: nonexistent device, no Initial installed on rigid or floppy or in wrong place, no Initial installed on boot server, bad checksum on boot server's Initial, not connected to net during net boot.
0199	The Initial microcode is fetching Mesa microcode and Germ diagnostic microcode. Initial typically fetches blocks of code which belong either in the IOP or the Mesa processor, and puts them in the right place. At the end of this step, it starts the CP for the first time. This code should never hang forever if the hardware is functioning correctly; it should be followed by either 200 (success) or 201 (failure).
0200	The Mesa microcode and Germ or diagnostic microcode has been successfully fetched from the boot device, and has started execution.
0201	The Mesa microcode and Germ or diagnostic microcode cannot be fetched from the boot device. Possible causes: same as for code 151.
▌0209	Rigid disk read error. The rigid disk is not self-identifying. The Self Describing Disk (SDD) page cannot be read reliably.
0211	Rigid disk seal error. The rigid disk is not self-identifying. The first word in the Self Describing Disk (SDD) page has an incorrect value. ▌

Code	Description
▌0212	Rigid disk version error. The rigid disk is not self-identifying. The Self Describing Disk (SDD) page is not the correct version for booting.
0213	Rigid disk checksum error. The rigid disk is not self-identifying. The Self Describing Disk (SDD) page has been corrupted. ▌
0501	The Germ and Mesa microcode have been fetched successfully. The Germ has started execution. Opie and the Mesa Emulator have been started.
0900	Boot loader started loading boot file.
0901	Boot loader frame fault. The Pilot boot loader has received a frame fault. This could be caused by hardware, by client code overwriting the boot loader, by the boot mesa file (given to MakeBoot when the boot loader was created) specifying an inadequate distribution of frames, or by a boot loader software bug. cGermAllocFault.
0902	Boot loader received unexpected trap or kernel function call. The Pilot boot loader got a trap or kernel function call for which it does not provide a handler. This could be caused by hardware, client code overwriting the boot loader, or by a boot loader software bug. In the development environment only, this code can be caused by the following: From the time that you push the boot button until Pilot moves the Germ into the display bank, you can only teledebug. You cannot use a local debugger because it is installed with the germ in the display bank, and if called when the germ is not in the display bank, the inload of Copilot will smash the germ resulting in MP 902. cGermControlTrap.
0903	Boot loader attempting to start an already started module. The Pilot boot loader got a start trap on a module which has already been started. This could be caused by hardware,

Code	Description
	client code overwriting the boot loader, or by a boot loader software bug. cGermStartFault.
0904	Boot loader page or write-protect fault. The pilot boot loader got a page fault or write fault. This could be caused by hardware, client code overwriting the boot loader, or by a boot loader software bug. cGermMemoryFault.
0905	Boot loader is wrong for current initial microcode. The boot loader has detected that it is not compatible with the initial microcode which it is running on. This could also be caused by hardware, or client code overwriting the boot loader. cWrongGerm.
0906	Boot loader and boot file have different version numbers. The Pilot boot loader has discovered that it is not compatible with the Pilot which just called it. This could also be caused by hardware, client code overwriting the boot loader, or by a boot loader software bug. cGermWrongPilot.
0909	Boot loader SIGNAL or ERROR. The Pilot boot loader got a Mesa SIGNAL or ERROR. This could be caused by hardware, client code overwriting the boot loader, or by a boot loader software bug. cGermError.
0910	Boot loader running, doing inLoad or outLoad. cGermAction.
0911	Boot loader incompatible with physical volume. cGermBadPhysicalVolume.
0912	Boot loader incompatible with MakeBoot used for boot file. The version of MakeBoot which was used to produce the boot file being loaded is incompatible with the boot loader being used (i.e., different versions of StartList.mesa). cGermBadBootFileVersion.
0913	No physical boot file installed. The boot loader has been instructed to boot the system physical

Code	Description
	volume boot file but there is none installed cGermNoPhysicalBootFile.
0914	Boot file contains invalid data. The boo loader has detected bad data in the boot file i is loading. cGermBadBootFile.
0915	Ethernet debuggee server in control. The system is waiting to talk to a remote Etherne debugger. A local debugger is not being usec because it is too early in initialization to finc the local debugger. cTeledebugServer.

If 0915 occurs, perform the service procedure in RAP 9 of the 6085 Product Support Manual. |
| 0916 | Boot file will not fit in real memory. The boo file that the boot loader is loading is too large to fit into real memory cGermInsufficientRealMemory. |
| 0917 | Machine is being remote debugged. The system is being debugged by another machine over the Ethernet. This indicates status only. |
| ▌0919 | Workstation has completed File Check bu there is a version mismatch between the Etherboot Installer boot files and the boot file resident on the rigid drive.

Reboot workstation by pressing B Reset. ▌ |
| 0920 | Boot loader device driver running (disk ethernet, floppy). cGermDriver. |
| 0921 | Boot loader device error on device being booted. cGermDeviceError.

Typically, this means that a File Check was rur with no File Check software installed. Call for the System Administrator or Xerox System Analyst. |
| 0922 | Operation on boot device not completed in the expected time. Typically, this is reported by ar |

Code	Description
	Ethernet operation when the source of the data being read has stopped supplying data. cGermTimeout.
0923	Boot loader disk label check processing boot file. cGermLabelCheck.
0924	Ethernet boot server not responding. cGermNoServer.
0925	Unexpected Ethernet packet sequence number or size. The boot loader received a packet from the Ethernet which contains an unexpected packet sequence number or size. cGermFunnyPacket.
0927	Boot file ends before it should. The germ has found no more boot file to load when it expected more, likely due to broken link. Reinstall the boot file and try again.
0928	Waiting for any boot server to respond. Pilot displays this code while it is waiting for a response from any server.
0930	Pilot control and Mesa runtime systems being initialized. cControl.
0931	Pilot not compatible with MakeBoot, which produced boot file. A Pilot boot file has received control, but discovered that the software it contains is incompatible with the version of MakeBoot which produced that boot file (i.e. different versions of StartListmesa). CBadBootFileVersion.
0932	Trap before trap handler initialized. Pilot has gotten a trap very early in its initialization before the handler for the trap has been initialized. cEarlyTrap.
0933	Pilot incompatible with boot loader. The Pilot inside the boot file (which has just started running) has discovered that it is incompatible with the boot loader that loaded it (i.e.,

Code	Description
	different versions of Boot.mesa) cBadBootGermVersion.
0934	Boot file's StartList contains bad data. The Pilot in the boot file (which has just started running) has found bad data in the StartList in that boot file. cBadBootFile.
0935	Need Ethernet debuggee server but boot loader is not capable of acting as one. The boot loader being used has been requested to act as an Ethernet debuggee server but it does not have that capability. cCantSwap.
0936	Waiting for microcode debugger. Pilot is spinning in a loop, waiting to be debugged by an attached microcode debugger (Burdock or Midas). This behavior is invoked by trying to go to the debugger when Pilot was booted with the "&" or "/376/" boot switch. cHang.
0937	Attempting to set the time via Ethernet or hardware clock. Pilot is attempting to get the time of day from an Ethernet Time Server. If none responds, it attempts to get the time from the hardware clock. The system displays this cursor code until the time is available from one of these sources. cTimeNotAvailable. Check the Ethernet cable connection. If it is not an Ethernet problem, ask the System Administrator to set the time on the server running the Clearinghouse Service (or External Communication Service), then reboot.
0938	Stopping devices before boot or visit to debugger. Pilot has begun shutting down the I/O devices ("running cleanup procedures") in preparation for booting another system or going to the debugger. If this code persists for more than a moment, some software or hardware has hung up. cCleanup.
0939	System Power Off called, and no power control relay. CPowerOff.

Code	Description
0940	Pilot Store component being initialized. cStorage.
0946	System logical volume needs scavenging. The system logical volume must be scavenged with the Risky Repair option to return it to a consistent state. The Risky Repair scavenge should be attempted only after the disk hardware has been verified to be working properly.
	If 0946 occurs, perform the scavenging procedures in RAP 9 of the 6085 Product Support Manual.
0947	Waiting for disk drive to become ready. Pilot displays this code when the disk drive, containing the system being booted, is not ready. cDriveNotReady.
0948	System physical volume needs scavenging. cPVNeedsScavenging.
	If 0948 occurs, perform the scavenging procedures in RAP 9 of the 6085 Product Support Manual.
0949	Disk hardware error while scavenging system volume. Pilot unable to complete scavenging due to a hardware error trying to access the disk.
▮ 0950	The Logical Volume is being scavenged (verified). Do not reboot! The amount of time required for scavenging depends on the size, occupancy, and fragmentation of the Logical Volume. If a logical volume being booted or opened is in an inconsistent state, Pilot will display this cursor code while it scavenges the contents of the volume. cScavenging. ▮
	During ViewPoint startup, this cursor code may display for up to 5 minutes. The startup process will then continue.

Code	Description
0951	Alternate code for progress of logical volume scavenging. This is an alternate to cScavenging, available for additional feedback on the progress of the logical volume scavenger. Indicates status only.
0952	Alternate code for additional passes of logical volume scavenger. This code is an alternate to cScavenging and cScavenging Alternate, to indicate additional passes during logical volume scavenging. Indicates status only.
0953	Debugger pointers are invalid. Reset or clear debugger pointers, or install the debugger and repeat the operation.
0960	Temporary files from previous run being deleted. cDeletTemps.
0965	Insufficient file space for Pilot data space backing store. This cursor code is caused by the booting agent (usually the operator, talking to Othello, Prometheus, etc.) specifying a boot switch ("[","!","]", or none of them) which specifies a size for the pilot data space backing storage cache but there is not enough free space on the system volume to provide the requested file space. This error can only happen when the size specified is larger than that specified during the previous boot session cInsuffBackingStore.
0970	Spaces being created for non-bootloaded code & data. cMap.
0975	Transaction crash recovery: the code indicates status only. cTransactionCrashrecovery.
0980	Communication being initialized cCommunication.
0981	Waiting for a Pup/EthernetOne 8-bit address This occurs only on Processors operating in the

Code	Description
	development environment, never in customer environments. cFindPupAddress.
0990	PilotClient.Run has been called. cClient
2820	Cartridge Tape Diagnostics are running, with no errors.
2821	Cartridge Tape Diagnostics hardware error. Suspected components are: the IOP PWB, the Tape Drive, and the Harness.
2822	Cartridge Tape Diagnostics hardware error. Suspected components are: the Tape Drive, the Harness, and the IOP PWB.
2823	Cartridge Tape Diagnostics media or hardware error (too many soft read errors). Suspected components are: the Tape Drive, the Harness, and the IOP PWB.
2824	Cartridge Tape Diagnostics media or hardware error (too many hard read errors). Suspected components are: the Tape Drive, the Harness. and the IOP PWB.
2825	Cartridge Tape Diagnostics error (an I/O command has timed out). Suspected components are: the Tape Drive, the Harness, the IOP PWB, the Mesa Processor, and the Motherboard.
2826	Cartridge Tape Diagnostics retension failure. Suspected components are: the Tape Drive, the Harness, and the IOP PWB.
2827	Cartridge Tape Diagnostics failure (cannot read the Bad Page Table). Run the **Exerciser** using a scratch tape to verify the tape subsystem.
2829	Cartridge Tape Diagnostics Real Time Clock problem. Suspected components are: the IOP PWB, and the Cursor Code PWB. ▪

Code	Description
7500	The File Check software is running. This code remains displayed until File Check is complete and the workstation boots the software back up.

CAUTION
Initializing user file systems is destructive to file already on the system volume. Do not initialize without contacting the System Administrator or Xerox Systems Analyst.

Code	Description
7504	This code normally indicates the user file system must be initialized. However, if this appears after a workstation has completed booting once, **do not** initialize this volume. Call for the System Administrator or the Xerox Systems Analyst.
7511	The File Check software needs to be installed and run. Call for the System Administrator or the Xerox Systems Analyst. (Or, you can refer to the note following step 18 in either Procedure 6.14, SOFTWARE INSTALLATION FROM FLOPPY or 6.15, SOFTWARE INSTALLATION FROM THE NETWORK, of the 6085 Product Support Manual, to install and run the File Check software.)

NOTE: If file check software is already loaded on a 40MB or 80MB system, do not reload, but be sure to run the File Check software.

Code	Description
7530 +	(8 additional codes appear sequence with the code 7530.) The File Check was unable to complete successfully. Call for the System Administrator or the Xerox Systems Analyst.
7545	Unrecoverable Disk Error. There is a disk page that contains invalid data. The cursor codes will cycle as 7545, 0ggg, 0ggg, pppp, 0aaaa, 0aaa, and 0aaa, where gggggg is the global frame of the module and pppp is the program counter of the current instruction. aaaaaaaaa is the decimal address of the bad disk page.

Code	Description
7600	Xerox ViewPoint Software is being booted. Normal startup. No action required.
▌7604	The system files have been deleted. Reinstall the appropriate software. This code normally occurs when replacing or updating software after the old files have been deleted. ▌
76XX +	(The code appears in a series of codes following the code 9999.) Xerox ViewPoint Software cannot start. Refer to Appendix A of this handbook, Replacing Damaged Software.
7700	Xerox NetCom (or VP Remote Com or VP StandAlone) software is starting. Normal startup. No action required.
77XX +	(The code appears in a series of codes following the code 9999.) VP NetCom (or VP RemoteCom or VP StandAlone) software, containing Xerox ViewPoint Software, cannot start. Refer to Appendix A of this handbook, Replacing Damaged Software.
7800	All VP-Series applications that have been specified to be loaded automatically at workstation boot time are now being loaded. Normal startup. No action required.
78XX +	(The code appears in a series of codes following the code 9999.) An Auto-Run application cannot run. Refer to Appendix A of this handbook, Replacing Damaged Software.

9. 7650 ⬤ IMAGER DIAGNOSTICS

Introduction

The Xerox 7650 Pro Imager (also known as the "scanner") and scanner software allow the user to scan many different types of documents. The user can scan an image from a newspaper, a magazine, a photograph, or a drawing. This is a high quality, low cost asynchronous scanner, providing variable resolution capability.

The 6085 must have the following minimum hardware to support the scanner: a 19 inch display, an 80MB rigid disk drive, a 2.6MB memory (which includes the MEB PWB), an 8K Control Store, and a floppy disk drive.

This chapter is divided into the following areas of Scanner Diagnostics:

● Scanner Power-On Diagnostics: When the power is switched on, the scanner performs internal self-tests and port initialization. After scanner power-on diagnostics completes, the scanner is ready to receive scanner software (downloaded) from the 6085.

● Scanner On-Line Diagnostics: These diagnostics tests, which are accessed from the command line of the 6085, include reset, loop back tests, and the data gathering mode.

The data gathering mode monitors and stores hardware operational data from

the scanner, and totals the number of scans of the lamp to provide information for scheduled maintenance tasks.

- Scanner Off-Line Diagnostics: These diagnostics are exercisers used by the service representative. The exercisers include the basic scanner loop back test, the filter option loop back test, hard reset, soft reset, and calibration.

- Diagnostic Status Codes: The scanner error codes and the software generated problem codes, including the screen messages and descriptions, are contained in alphabetical tables.

NOTE: Scanner Boot Diagnostics are executed identical to Workstation Boot Diagnostics. Specific Scanner/Printer Boot Diagnostics Extended Isolation Test descriptions are located in Table 3-2, Chapter 3 of this handbook.

About the Scanner Diagnostics

The scanner diagnostic tests are used to verify that the scanner is capable of normal operation and fault isolation to a FRU (field replaceable unit). The VC/I (video control/interface) software will transmit error codes and diagnostic data to the workstation for access by the user or service representative. Any time there is an active fault condition, the red fault status indicator on the scanner is illuminated constantly. Any time the VC/I microprocessor is not functioning properly or it cannot communicate with the workstation, the fault line in the hardware interface to the

workstation is raised, and the fault status indicator is switched on.

The VC/I software performs error detection for video control serial communications during calibration and scanning.

The VC/I software attempts to keep the scanner operational whenever a problem exists in the scanner hardware; a fault is ignored unless that particular feature/function is used. For example, if a problem exists with the Filter/Histogram PWB, the scanner can be used in all modes except those that use filter or histogram functions. Likewise, if a problem exists in the motor driver, the scanner can still perform loopback tests. The only error conditions which are not ignored are problems in the VC/I hardware.

The user can request diagnostic fault information from the scanner by sending a *Get Faults* command from the workstation. In this case, the scanner will respond with the accumulated error list and possible problem codes.

Notes:

Scanner Power-On Diagnostics

The power-on diagnostic check is performed every time the scanner is powered on. The machine state is not maintained in the scanner at power off. The power-on test sequence consists of two stages: VC/I Logic Self-test and Scanner Initialization (Pre-download), and Extended VC/I Check (Post-download).

VC/I Logic self-test

The initial power on/reset diagnostic self-tests are performed on the VC/I microprocessor. These tests insure that the microprocessor is functioning and that the downloadable memory space is good. A test is also run to ensure operation and accuracy of the clocks. If any of these tests fail, the VC/I microprocessor is put into a hold mode, the hardware fault line to the workstation is raised, and the fault status indicator is switched on.

Scanner Initialization

After the scanner software is loaded, the message "Initializing scanner" is displayed. During initialization the following steps occur:

1. The motor drive link is checked by driving the carriage until the carriage home sensor is activated.

2. The carriage is driven out until the registration position is detected by locating the hour glass figure at the bottom of the registration edge.

3. The scanner performs a dark calibration. The shading values on the Video PreProcessor (VPp) PWB are determined by reading the values from the Charged Coupled Device (CCD). (The CCD contains 5000 photocells, which measure the intensity of the reflected light. The VPp PWB digitizes the video signals.)

4. The illumination lamp is switched on and the light intensity is adjusted via the closed loop lamp intensity control (LIC) while checking the calibration strip.

5. The carriage is moved at small intervals to read the overall light of the CCD pixels.

6. A white calibration is performed. The carriage is moved under the calibration strip and a shading value is determined. (The scanner makes a clicking sound while performing the light operations.)

Extended VC/I Check

After the scanner software is downloaded, the VC/I software is accessed any time the workstation sends a reset command. The workstation can select additional diagnostic tests to be executed when the scanner is booted. A program memory checksum, an external memory test of the VC/I microprocessor RAM, and the parallel port transmission test are always executed. If the program memory or the external RAM tests fail, the VC/I microprocessor is put into a hold mode, the hardware fault line to the workstation is raised, and the fault status indicator is switched on.

Scanner On-Line Diagnostics

The Scanner On-Line Diagnostics provide a set of tools for servicing the 7650 Pro Imager. The On-Line Diagnostics are stored on the 6085 Rigid Disk, are accessed through the operating software, and are menu-driven (desired tests are selected from a menu on the display).

Initial Scanner On-Line Diagnostics Menu

▌All of the available Scanner On-Line Diagnostics tests are shown on an initial menu Nine individual tests and/or exercisers are available: Soft Reset, Hard Reset, Calibrate, Get Faults, Get Options, Scan, Version, Alignment, Loop Back, Get Counter, and Set Counter. ▌

The scanner software must be installed on the 6085, and the scanner must be powered on, to perform Scanner Diagnostics.

Enter Scanner On-Line Diagnostics from the 6085 Logon Option Sheet or from the desktop, by moving the cursor to the Command Line Press and <u>hold</u> the left button on the mouse. A list of options appears. Moving the pointer in an up and down motion moves the highlighting up and down the option list Position the highlighting on the **Scanner Diagnostics** option, and release the left button on the mouse. The Scanner Diagnostics window will appear.

Any of the tests on the Scanner Diagnostics Menu may be selected by pointing to the test with the cursor and pressing the left mouse button. Further instructions are included in

the Scanner Diagnostics message window area, as shown in Figure 9-1.
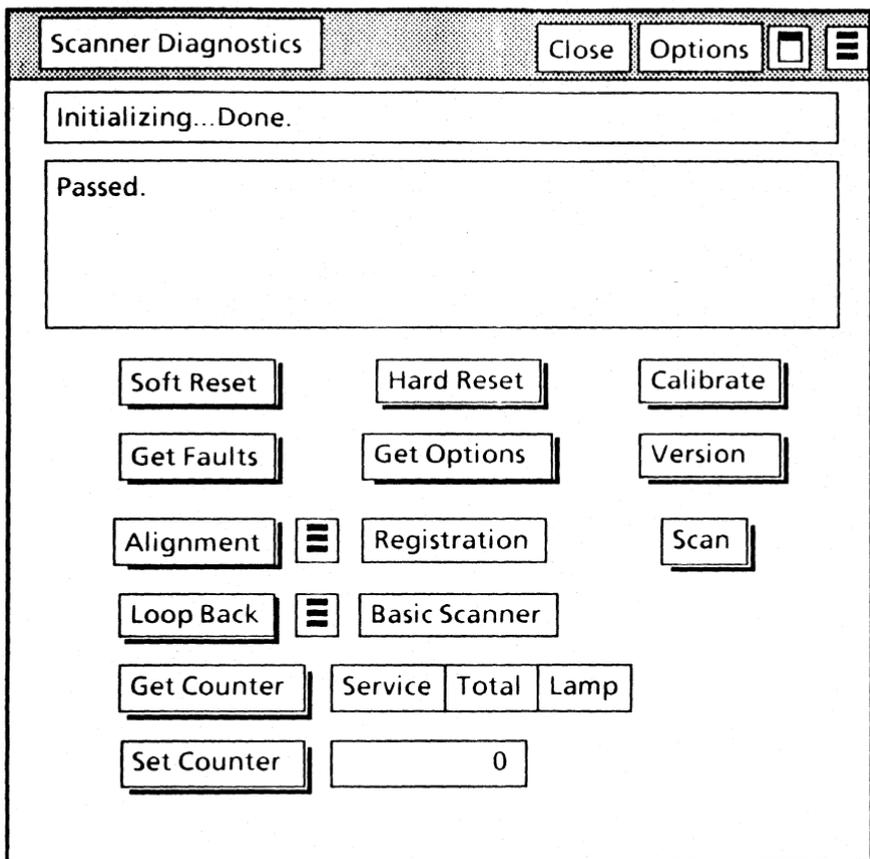
Figure 9-1   Scanner On-Line Diagnostics Window

When a test is selected with the mouse button, that operation will begin. If you do not wish to perform a test, selecting [Close] returns the workstation to the state it was in before the Scanner On-Line Diagnostics was invoked.

As a test is executed, status messages appear in the Status Window (the small window). Results

also appear, below the Status Window, in the Message Window.

When the scanner is communicating with the 6085, the cursor will become an hour glass on the display. When the 6085 is communicating with the scanner, the cursor will become blinking rectangles on the display.

Hour glass   Blinking Rectangles

At any time during the execution of a test the user may press <STOP> and the current test halts, with applicable results in the test window.

If an error or problem status code appears, refer to the Diagnostic Status Code Tables at the end of this chapter for a description of each code.

Scanner Diagnostics Options

Selecting [Options] with the mouse accesses the Option Sheet that allows the user to change various test parameters. For test parameters that the user can change, the option sheet choice parameters can be selected by using the mouse to highlight the desired option. In the example below, the user can choose to run a test once or continuously, and have the test stop on an error or continue to run. To set any of the three counters (Service, Total and Lamp), the user must type the appropriate password into the text parameter. As the user types the password, asterisks display rather than the actual text.

| Option Sheet | | Done | Cancel | Defaults | ▢ | ☰ |

Run tests   [once] continuously

On errors   [stop] continue

Authorization password [   ] to set counters

Figure 9-2   Scanner Diagnostics Option Sheet

Soft Reset

The Soft Reset performs the following reset functions:

- clears all the scanner registers
- runs the scanner internal diagnostic (Power-On and Initialization), if necessary
- downloads the scanner software, if necessary
- calibrates the lamp intensity

Scanner Diagnostics   Close   Options ☐ ☰

Soft Reset...Done.

Passed.

| Soft Reset | Hard Reset | Calibrate |

| Get Faults | Get Options | Version |

| Alignment | ☰ | Registration | Scan |

| Loop Back | ☰ | Basic Scanner |

| Get Counter | Service | Total | Lamp |

| Set Counter | 0 |
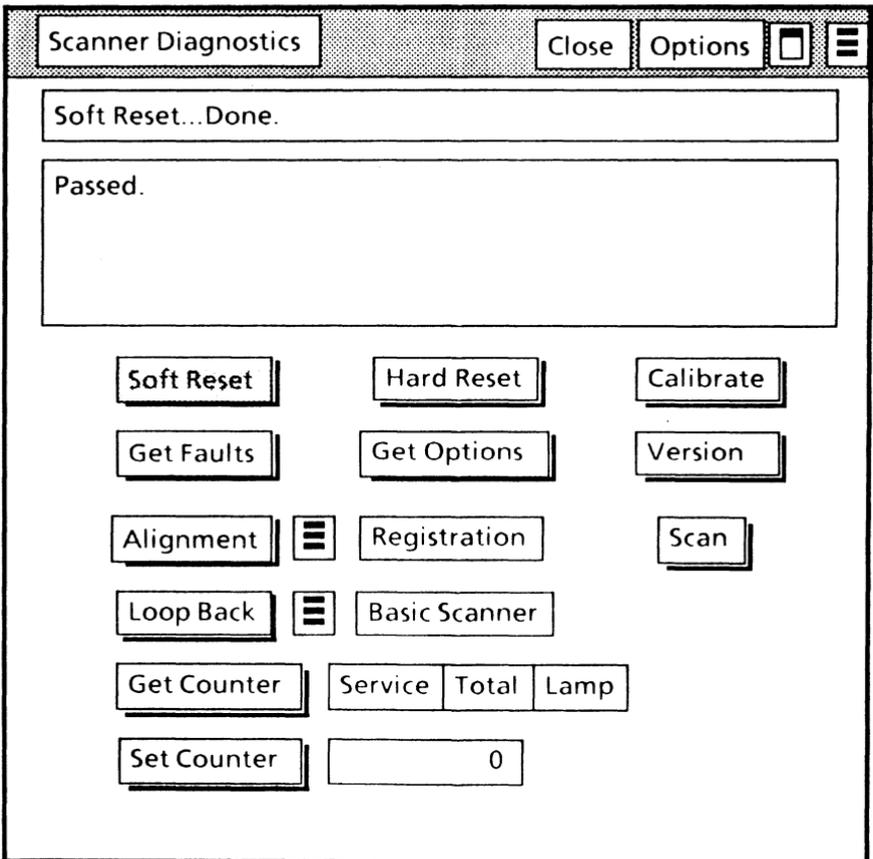
Figure 9-3   Scanner On-Line Soft Reset

Hard Reset

This exerciser issues a reset command that causes the Power-On procedure to be repeated. A Hard Reset performs the following functions:

- clears all the scanner registers
- runs the scanner internal diagnostics (Power-On and Initialization)
- downloads the scanner software
- calibrates the lamp intensity
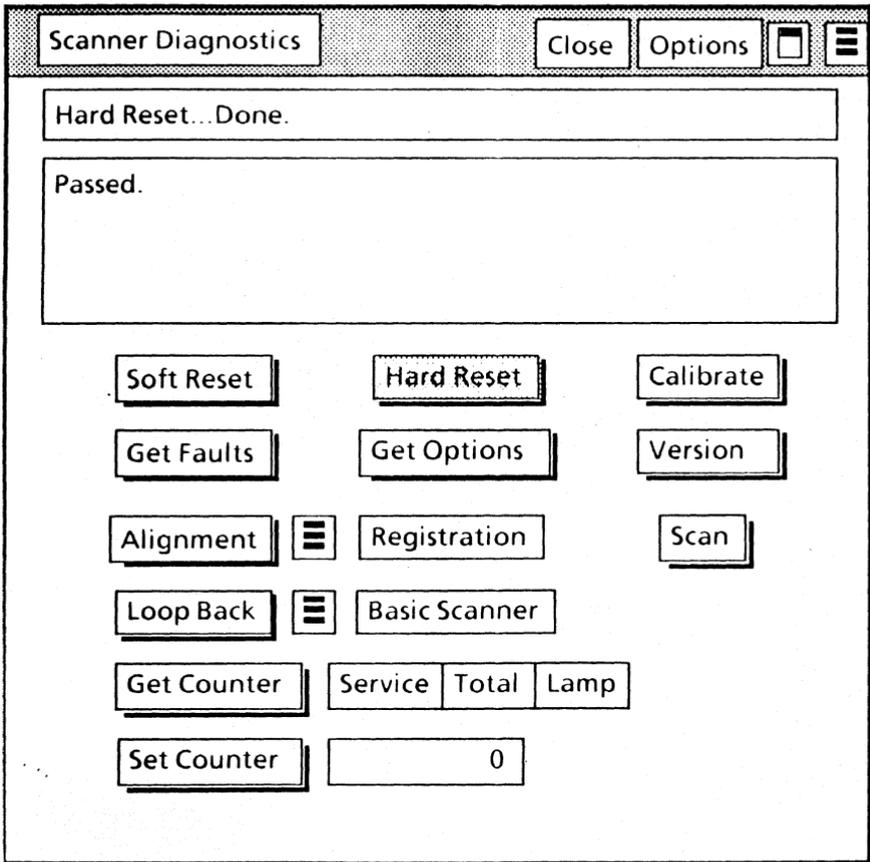
Figure 9-4   Scanner On-Line Hard Reset

Calibrate

This exerciser sets the lamp intensity level so
that both the weakest and the strongest pixels
can be balanced for proper exposure.

Scanner Diagnostics   Close Options ⬜ ☰

Calibrating...Done.

Passed.

Soft Reset	Hard Reset	Calibrate
Get Faults	Get Options	Version
Alignment ☰	Registration	Scan
Loop Back ☰	Basic Scanner	
Get Counter	Service	Total	Lamp
Set Counter	0
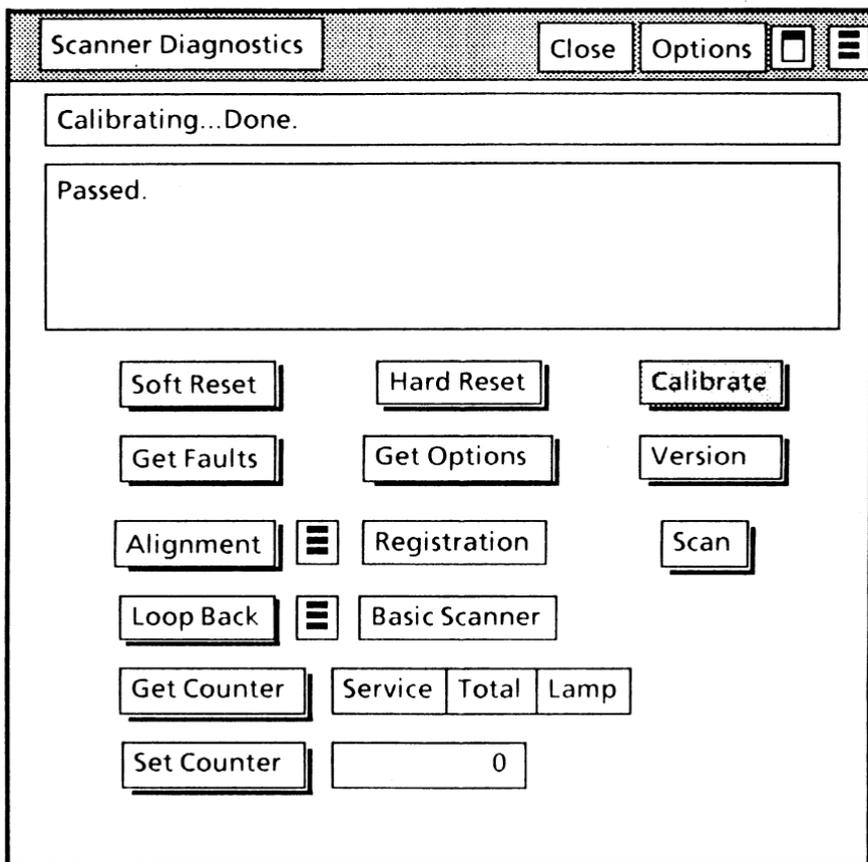
Figure 9-5   Scanner On-Line Calibrate

Get Faults

This exerciser allows the service representative to read the accumulated error codes, if any, currently being monitored on the scanner.

```
┌──────────────────────────────────────────────────────────────┐
│  Scanner Diagnostics              │ Close │ Options │ ☐ │ ≡ │
│──────────────────────────────────────────────────────────────│
│  ┌────────────────────────────────────────────────────────┐  │
│  │ Getting Faults...Done.                                 │  │
│  └────────────────────────────────────────────────────────┘  │
│  ┌────────────────────────────────────────────────────────┐  │
│  │ *****Scanner's accumulated error list:                 │  │
│  │ 1H, 3H, 4H, CH                                         │  │
│  │                                                        │  │
│  └────────────────────────────────────────────────────────┘  │
│                                                              │
│   │ Soft Reset │      │ Hard Reset │      │ Calibrate │      │
│                                                              │
│   │ Get Faults │      │ Get Options │     │ Version │        │
│                                                              │
│   │ Alignment │ ≡     │ Registration │    │ Scan │           │
│                                                              │
│   │ Loop Back │ ≡     │ Basic Scanner │                      │
│                                                              │
│   │ Get Counter │  │ Service │ Total │ Lamp │                │
│                                                              │
│   │ Set Counter │  │        0        │                       │
└──────────────────────────────────────────────────────────────┘
```
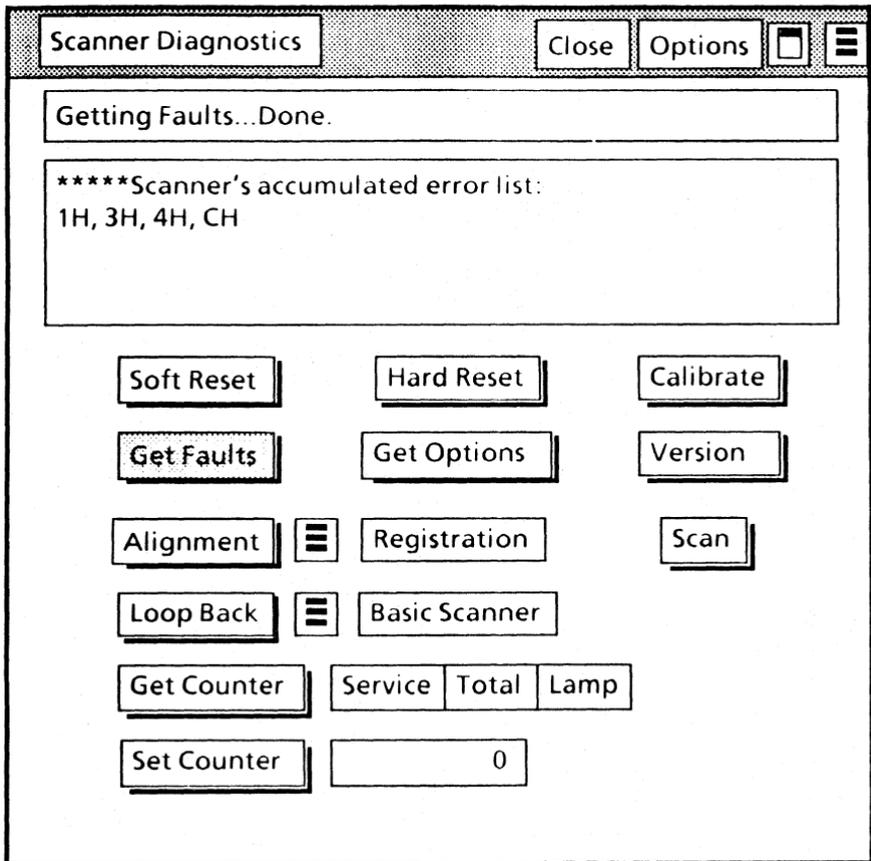
█ Figure 9-6   Scanner On-Line Get Faults █

The Error ("H") Codes are generated by the
scanner internal hardware. Usually the scanner
fault status indicator will be illuminated
whenever *Get Faults* produces "H" codes
Problem ("F") Codes are software associated
and are not generated by the scanner
Therefore, the *Get Faults* selection lists all error
("H") codes and not the problem ("F") codes.

During a test, the diagnostic window may
display only one error code even if there are
multiple faults. If, for example, the error code
1H was displayed, selecting "Get Faults" might
list the accumulated error list 1H, 3H, 4H, and
CH.

Get Options

The Get Options selection displays the optional scanner PWBs. Currently, the only optional scanner PWB is the Filter/Histogram PWB.

```
┌─────────────────────────────────────────────────────────────────┐
│ ░Scanner Diagnostics░             │ Close ║ Options ║▯║ ≡         │
│                                                                   │
│  ┌─────────────────────────────────────────────────────────────┐ │
│  │ Getting Hardware Options...Done.                            │ │
│  └─────────────────────────────────────────────────────────────┘ │
│  ┌─────────────────────────────────────────────────────────────┐ │
│  │ Filter board installed.                                     │ │
│  │                                                             │ │
│  │                                                             │ │
│  │                                                             │ │
│  └─────────────────────────────────────────────────────────────┘ │
│                                                                   │
│     ┌────────────┐    ┌────────────┐    ┌────────────┐           │
│     │ Soft Reset │    │ Hard Reset │    │ Calibrate  │           │
│     └────────────┘    └────────────┘    └────────────┘           │
│     ┌────────────┐    ┌────────────┐    ┌────────────┐           │
│     │ Get Faults │    │ Get Options│    │ Version    │           │
│     └────────────┘    └────────────┘    └────────────┘           │
│     ┌────────────┐ ┌─┐ ┌────────────┐    ┌────────┐              │
│     │ Alignment  │ │≡│ │Registration│    │ Scan   │              │
│     └────────────┘ └─┘ └────────────┘    └────────┘              │
│     ┌────────────┐ ┌─┐ ┌──────────────┐                          │
│     │ Loop Back  │ │≡│ │ Basic Scanner│                          │
│     └────────────┘ └─┘ └──────────────┘                          │
│     ┌────────────┐ ┌────────┬───────┬──────┐                     │
│     │ Get Counter│ │Service │ Total │ Lamp │                     │
│     └────────────┘ └────────┴───────┴──────┘                     │
│     ┌────────────┐ ┌──────────────────┐                          │
│     │ Set Counter│ │        0         │                          │
│     └────────────┘ └──────────────────┘                          │
│                                                                   │
└─────────────────────────────────────────────────────────────────┘
```
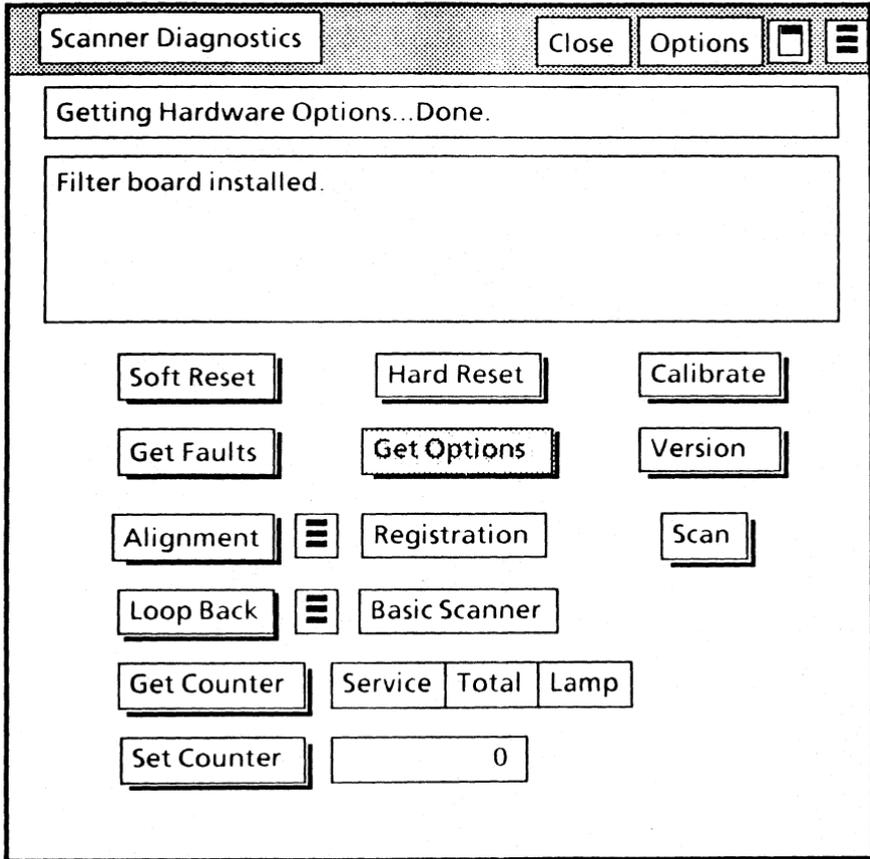
Figure 9-7   Scanner On-Line Get Options

Version

The selection of the Version softkey will display
the version number of the VC/I software that i
down loaded and resident in the scanner.

Alignment

This exerciser uses the Ready lamp on the 7650 Pro Imager to assist in the alignment adjustment for registration and skew. The selection of Registration or Skew adjustments can be made by moving the cursor to the Auxiliary Menu to the right of the Alignment softkey. Press and hold the left button on the mouse. The Registration and Skew selection will appear. While holding the left mouse button, move the mouse to either **Registration** or **Skew** to highlight the selection. Release the left mouse button and the exerciser selected will appear to the right of the Auxiliary Menu.

The selection of the Alignment softkey will start the exerciser. During the alignment, the Ready lamp will flash. The lamp will flash faster as the Registration Edge Assembly is moved closer to proper alignment. When the Registration Edge Assembly is properly aligned for registration and skew, the Ready lamp will be on continuously.

The Registration adjustment is made with the eccentric adjustment screw near the rear of the 7650 Pro Imager Scanner. The Skew adjustment is made with the eccentric adjustment screw located near the front of the scanner. Both eccentric screws can be found on the Registration Edge Assembly and are accessible with the top cover removed.

To exit the Registration or Skew alignment, press <STOP>.

Scan
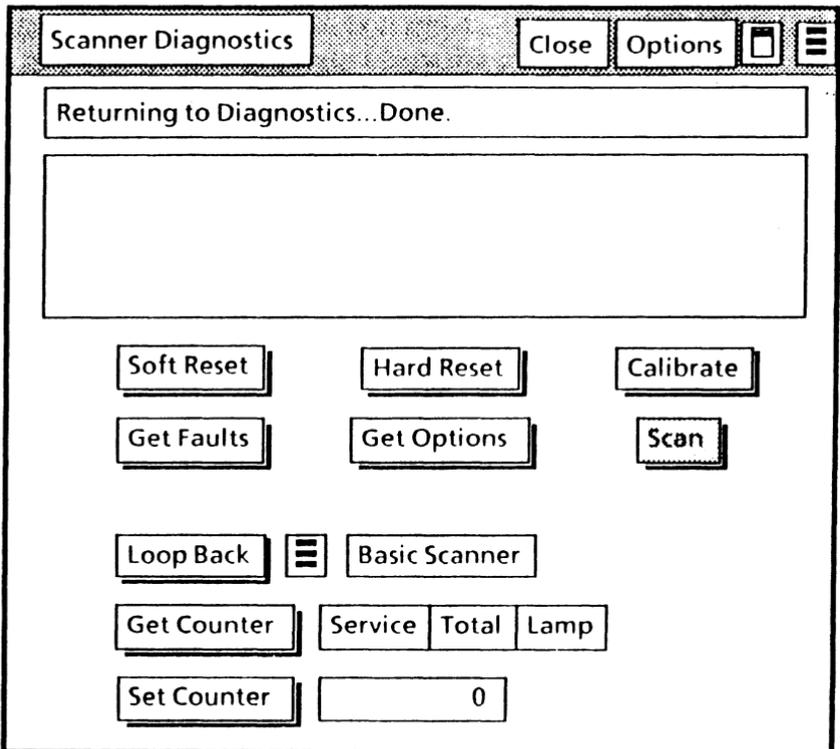
Figure 9-8   On-Line Scan

When Scan is selected, new windows will appear that are similar to the customer interface. They are the Platen Display and the Control Panel windows. (The Control Panel Window is shown in Figure 9-9.)

NOTE: To resize the Platen Display window, move the cursor to the corner of the window to be stretched. Press and hold the right button on the mouse, move the mouse to the desired location for the new corner position, and release the right button.
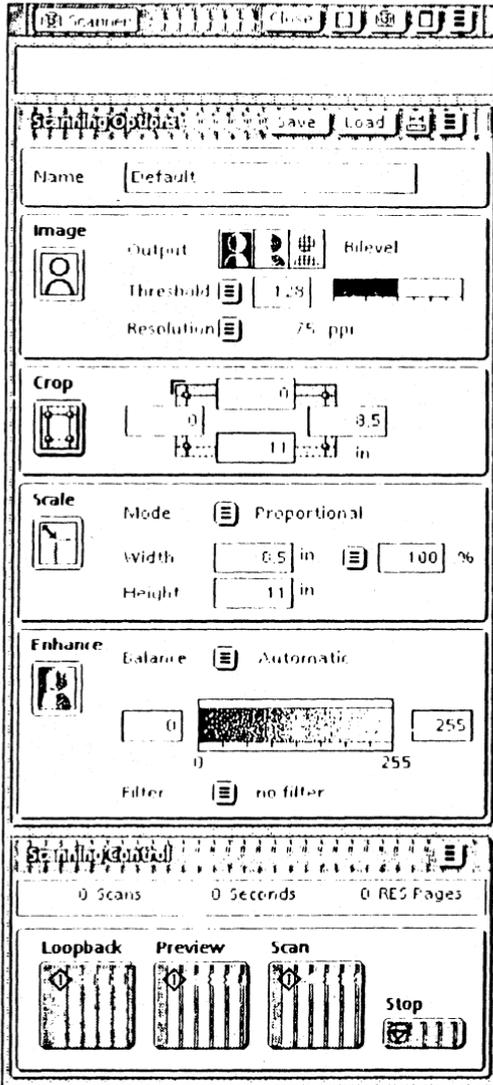
Figure 9-9 Control Panel Window

The Control Panel Window Command Area

The **Control Panel** window command area, above the message area, contains the following:

- The **[Close]** window command usually closes only one window. But it this case, it closes both the Control Panel and Platen Display windows.

- The **Platen Display Icon** opens the Platen Display window or closes the open one.

- The **Scanner Icon** displays the Calibrate, Scanner Reset, and Scanner Configuration menu items.

Calibrate
Scanner Reset
Scanner Configuration
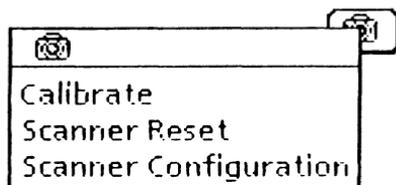
Figure 9-10 Scanner Icon

- The **Window Management Auxiliary Menu** contains items used for window manipulation.

- The **Floating Items Auxiliary Menu** is represented by three horizontal lines. When the Control Panel window is too narrow to display all the window commands, these commands appear in the Floating Items Auxiliary Menu.

The Scanning Options Area

The Scanning Options area (Figure 9-11) contains four major sections (Image, Crop, Scale, and Enhance) that are used to set their corresponding set-up parameter values. How the values are selected may greatly affect the quality of the image.

Figure 9-11 Scanning Options

The Scanning Options window command area contains the following:

Scanning Options   Save   Load

Figure 9-12 Scanning Options Window Command Area

- The [Save] window command is used to store a set of scanning values as a desktop file.

SAVE TO:

Desktop
Default Values
Preview Values
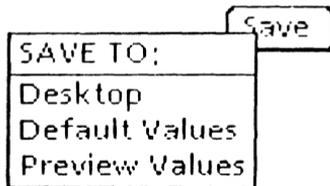
Figure 9-13 Save Values

- The [Load] window command refers to the loading of pre-selected scanning option values.

LOAD FROM:

Default Values
Preview Values
Current Scan Values
Previous Scan Values
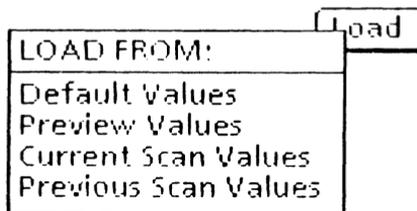
Figure 9-14 Load Values

- The **Units icon**, represented by a ruler, displays menu items of various measurements.
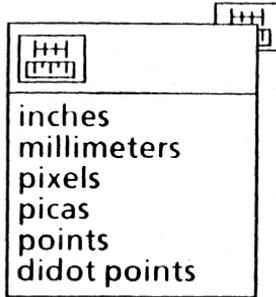
Figure 9-15 Units Icon

- The **Floating Items Auxiliary Menu** is represented by three horizontal lines. When the Control Panel or Scanning Options window is too narrow to display all the window commands, these commands appear in the Floating Items Auxiliary Menu.

The **Name section** is used only if values are to be saved in a file. The name "Default" is automatically entered.
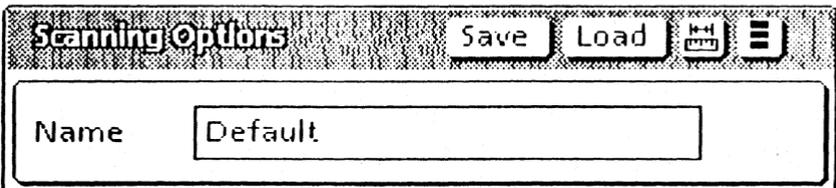
Figure 9-16 Name Section

The **Image section** is used to determine the image output type. The **Output** type may be Bilevel, Grayscale, or Halftone.
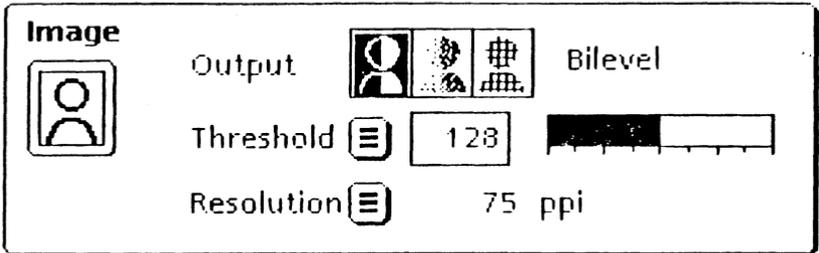
Figure 9-17 Image Section

- **Resolution** (the number of pixels per square area) is always present, independent of the image output type. The number represents the number of pixels, so the higher the number ·the finer the detail (Figure 9-17).

- **Threshold** appears only in the Bilevel Output type (Figure 9-17). Bilevel is the amount below which an image will be interpreted as black. The higher the threshold, the darker the scanned image will be.

- **Screen** appears only in the Halftone Output type (Figure 9-18). This eliminates the screening which is used in printing newspapers, magazines, etc.

```
Image    Output    [face] Halftone

         Screen    [≡]  * 75 Display

         Resolution [≡]    75 ppi
```
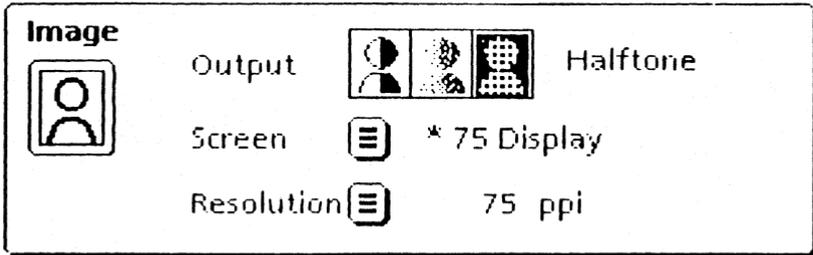
Figure 9-18 Halftone Output Type

The **Crop section** is used to identify a specific image area within a document to be scanned. To identify the image area before performing a scan, the dimensions can be entered in the boxes. After scanning a document, the user may identify a rectangular area within the scanned document as the image area by using the mouse.
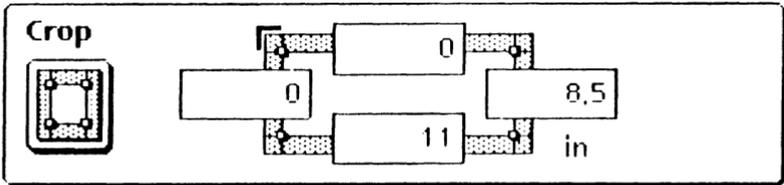
Figure 9-19 Crop Section

The **Scale section** allows the user to select a reduced or enlarged image of the document. The document can be scaled from 10% to 200% of the original size of the image. This scaling can be adjusted where both height and width are scaled equally (Proportional) or where height and width are scaled independently (Anamorphic).

Figure 9-20 Scale Section

The **Enhance** section contains two modes: Balance and Filter.
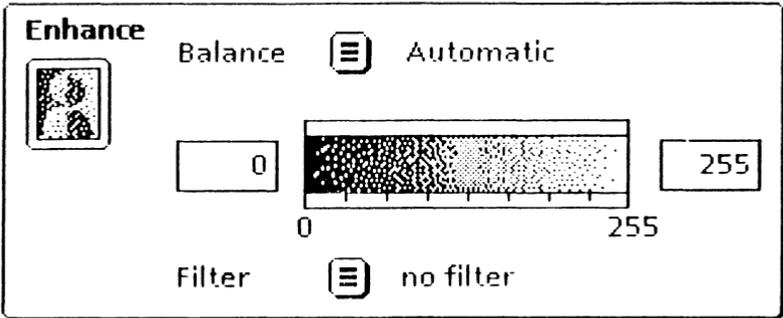
Figure 9-21 Enhance Section

- Balance is used for brightness and contrast. In the automatic and interactive settings of balance, the settings are calculated during the prescan. If the original is of poor quality and little contrast, select the manual or interactive setting. The balance values are shown in the scale from dark to light.

- There are eight filters, five for descreening and three for edge enhancement. Descreening is used to remove the screen created in the printing of newspapers or magazines. Edge enhancements are used to make the edges of the image more defined. No Filter is selected as the default.

The Scanning Control Area

The Scanning Control area allows the user to determine the scan mode – loopback, preview, or scan.
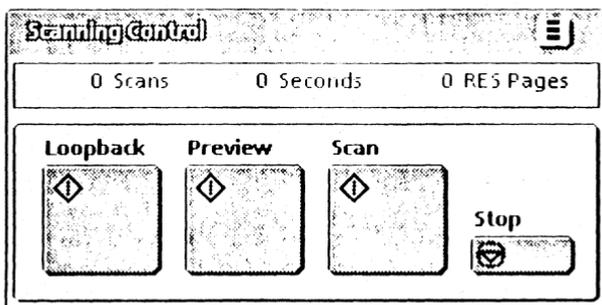
Figure 9-22 Scanning Control

- **Loopback**: The image currently in the Platen Display window will be reprocessed based on new values set by the user. (Presently, this mode is not implemented.)

- **Preview**: The image will be scanned at 75 ppi (pixels per inch) resolution using the default values.

- **Scan**: The image is scanned using values set by the user.

NOTE: Selecting Stop in the Scanning Control section at any time immediately stops the scan mode in progress.

If there is an image quality problem, it will not be obvious within diagnostics unless a test pattern (#82P151) is scanned. Refer to Figure 9-23. The service representative can scan the test pattern and display it on the 6085. The

6085 is capable of enlarging an area of the test pattern and showing the defects in the scanned image.

Figure 9-23 Test Pattern 82P151
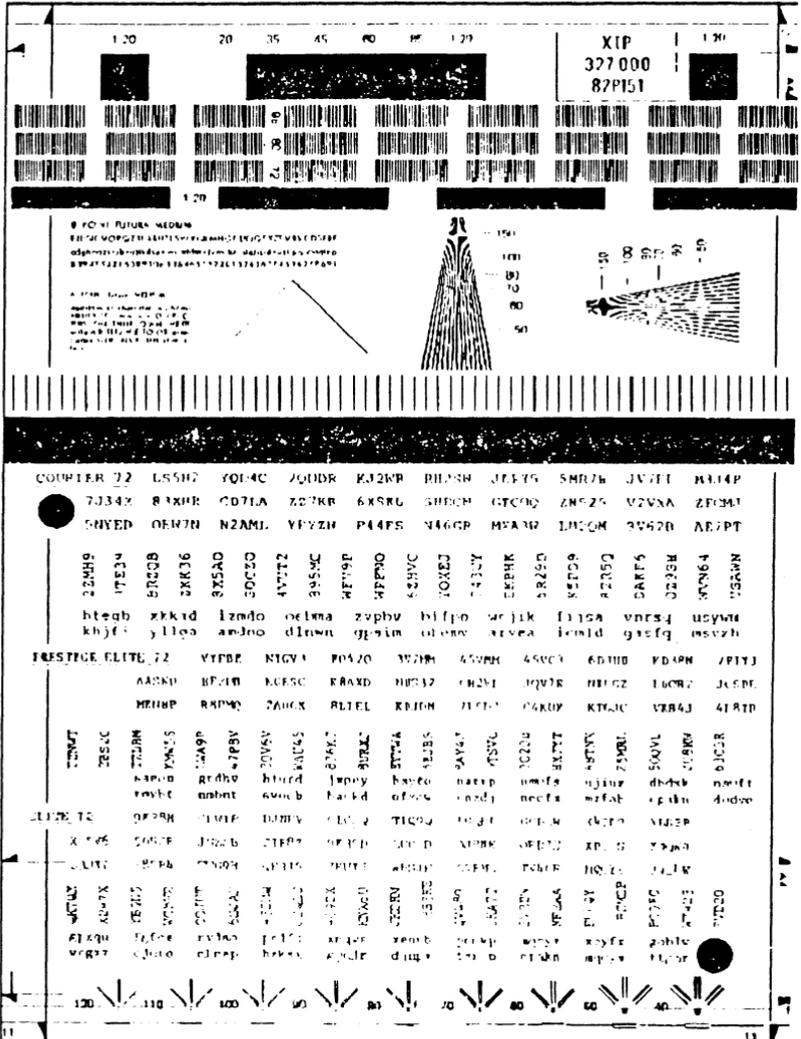
Loop Back

The Loop Back function tests one of a choice of parameters. Change from one parameter to another by moving the cursor to the Loop Back Auxiliary Menu to the right of the Loop Back softkey. Press and hold the left button on the mouse. The list of loop back choice parameters will appear. Moving the pointer in an up and down motion moves the highlighting up and down the options list. Position the highlighting on appropriate parameter, and release the left button on the mouse. The chosen parameter appears to the right of the Loop Back Auxiliary Menu.

Loop Back tests either the Basic Scanner or the Filter Option.

NOTE: The Filter Option choice parameter appears in the Loop Back Auxiliary Menu even if the Filter/Histogram PWB is not installed.

If at any time the Loop Back fails, a diagnostic status code will appear. Refer to the Diagnostic Status Code Tables at the end of this chapter for a description of each code.

Scanner Diagnostics   Close   Options 🗖 ☰

Processing Basic Scanner LoopBacks...Done.

Testing Grey Scale...Passed.
Testing windowing/cropping 8 bit...Passed.
Testing windowing/cropping binary...Passed.
Testing thresholding/screening...Passed.
Testing Scaling...Passed.

| Soft Reset | Hard Reset | Calibrate |

| Get Faults | Get Options | Version |

| Alignment ☰ | Registration | Scan |

| Loop Back ☰ | Basic Scanner | |

| Get Counter | Service | Total | Lamp |

| Set Counter | 0 |
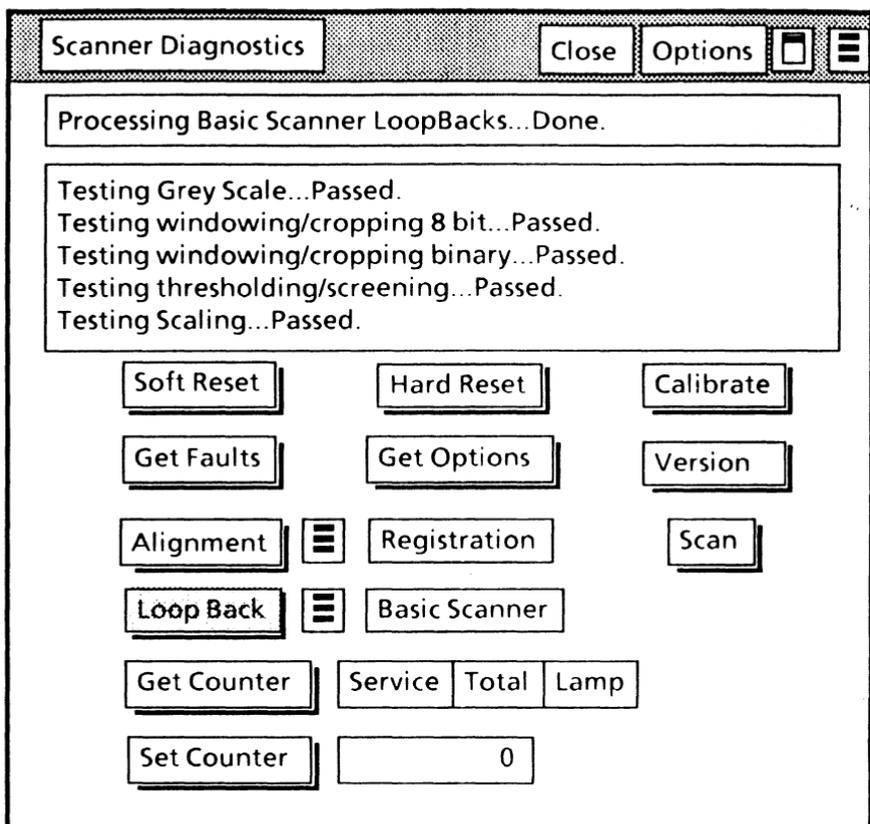
Figure 9-24 On-Line Basic Scanner Loop Back

```
┌─────────────────────────────────────────────────────────────┐
│ ▓ Scanner Diagnostics ▓▓▓▓▓▓▓▓▓  Close   Options  🗔  ☰ │
│ ┌───────────────────────────────────────────────────────┐   │
│ │ Processing Filter Option LoopBacks...Done.            │   │
│ └───────────────────────────────────────────────────────┘   │
│ ┌───────────────────────────────────────────────────────┐   │
│ │ Testing enhancement...Passed.                         │   │
│ │ Testing descreening...Passed.                         │   │
│ │                                                       │   │
│ │                                                       │   │
│ └───────────────────────────────────────────────────────┘   │
│                                                              │
│    Soft Reset        Hard Reset         Calibrate           │
│                                                              │
│    Get Faults        Get Options        Version             │
│                                                              │
│    Alignment   ☰    Registration        Scan                │
│                                                              │
│    Loop Back   ☰    Filter Option                           │
│                                                              │
│    Get Counter     Service│Total│Lamp                       │
│                                                              │
│    Set Counter           0                                  │
└──────────────────────────────────────────────────────────────┘
```
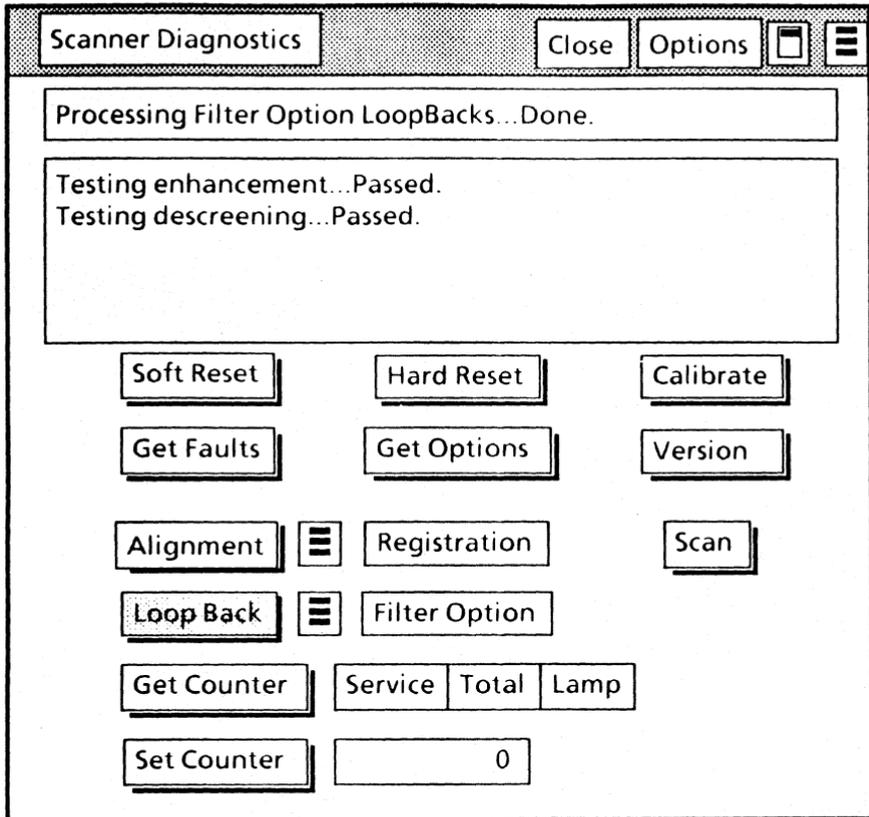
Figure 9-25   On-Line Filter Option Loop Back

> *NOTE: When the Filter Option Loop Back is selected, the Basic Scanner Loop Back will start automatically if it has not been performed prior to selecting the Filter Option Loop Back test.*

Get Counter and Set Counter

The Get Counter function contains three stat parameters: Service, Total, and Lamp.

Service: This parameter displays the numbe of scans since the service representative las performed Set Counter. For example, upor completing a service call, the servic representative should reset the Service counte to 0 (zero) by using the Set Counter function.

Scanner Diagnostics		Close	Options	🗖	☰

Getting Service Counter...Done.

Scans since last service = 968.

Soft Reset	Hard Reset	Calibrate
Get Faults	Get Options	Version

Alignment	☰	Registration	Scan
Loop Back	☰	Basic Scanner	

Get Counter	Service	Total	Lamp
Set Counter		0	
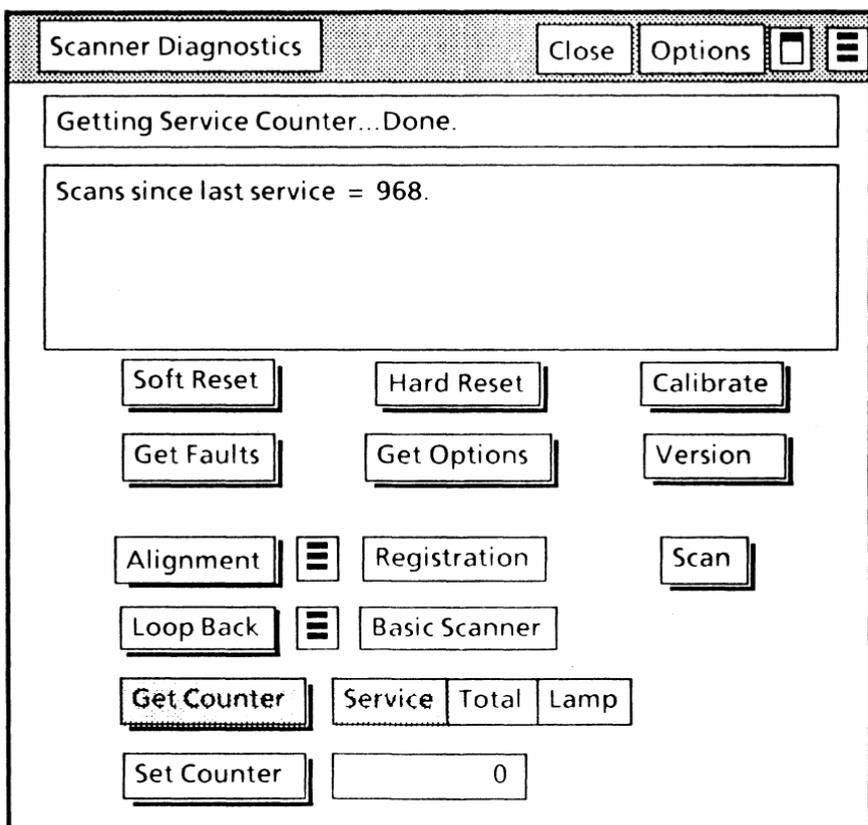
▌Figure 9-26   Scanner On-Line Service Counter▐

Total: This parameter displays the total number of scans since the software was loaded. If the scanner has been moved to a different 6085, the service representative should reset the total counter to 0 (zero) by using the Set Counter function.

| Scanner Diagnostics | | | Close | Options | ☐ | ☰ |

Getting Total Counter...Done.

Total scans = 1101.

| Soft Reset | | Hard Reset | | Calibrate |

| Get Faults | | Get Options | | Version |

| Alignment | ☰ | Registration | | Scan |

| Loop Back | ☰ | Basic Scanner |

| Get Counter | | Service | Total | Lamp |

| Set Counter | | 0 |
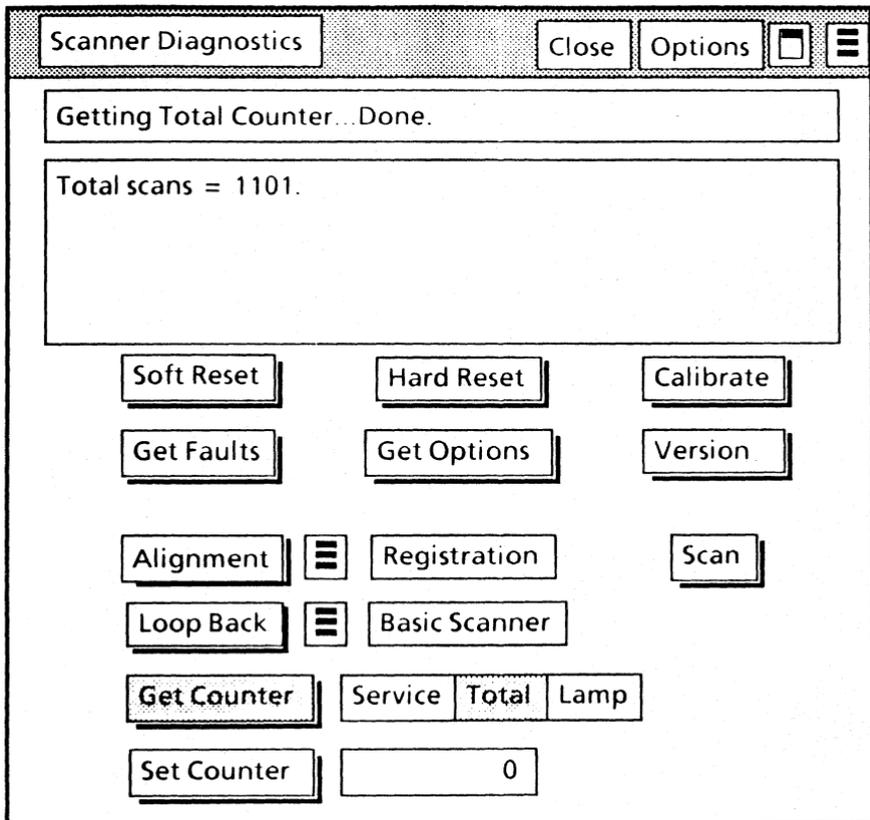
Figure 9-27 Scanner On-Line Total Counter

Lamp: This parameter displays the total number of times the lamp has illuminated When a lamp is replaced, the service representative should reset the lamp counter to 0 (zero) by using the Set Counter function.

NOTE: The lamp should be replaced at 20,000 scans.

Scanner Diagnostics   Close | Options | ⬜ | ☰

Getting Lamp Counter...Done.

Scans since last lamp change = 957.

| Soft Reset | | Hard Reset | | Calibrate |

| Get Faults | | Get Options | | Version |

| Alignment | ☰ | Registration | | Scan |

| Loop Back | ☰ | Basic Scanner |

| Get Counter | | Service | Total | Lamp |

| Set Counter | | 0 |
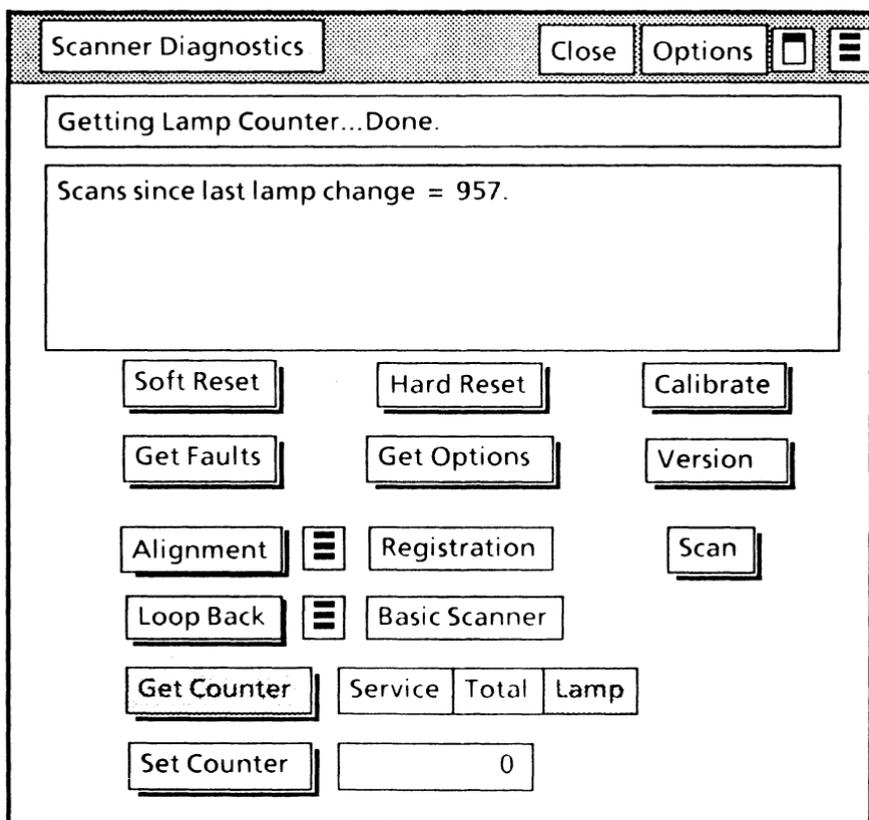
▌Figure 9-28   Scanner On-Line Lamp Counter▌

Set Counter

The Set Counter operation is used to reset the number of scans since the last service call, the total number of scans, or the number of lamp illuminations. This operation is available only in Scanner On-Line Diagnostics.

▌Resetting a counter requires the Authorization password. Select the [Options] window command. When the Scanner Diagnostics Option Sheet appears, type the authorization password (**rgmsn**). In the Scanner Diagnostics window, select the counter to be reset, and select *Set Counter.* ▌

Option Sheet		Done	Cancel	Defaults	☐	☰

Run tests ▨once▨ continuously

On errors ▨stop▨ continue

Authorization password ***** to set counters

▌Figure 9-29   Authorization Password to Set Counters ▌

Set Counter? ║ YES NO

Scanner Diagnostics   Close   Options   ⬜   ☰

Setting Service Counter to 0

Please confirm.

| Soft Reset | Hard Reset | Calibrate |

| Get Faults | Get Options | Version |

| Alignment | ☰ | Registration | Scan |

| Loop Back | ☰ | Basic Scanner |

| Get Counter | Service | Total | Lamp |

| Set Counter | 0 |
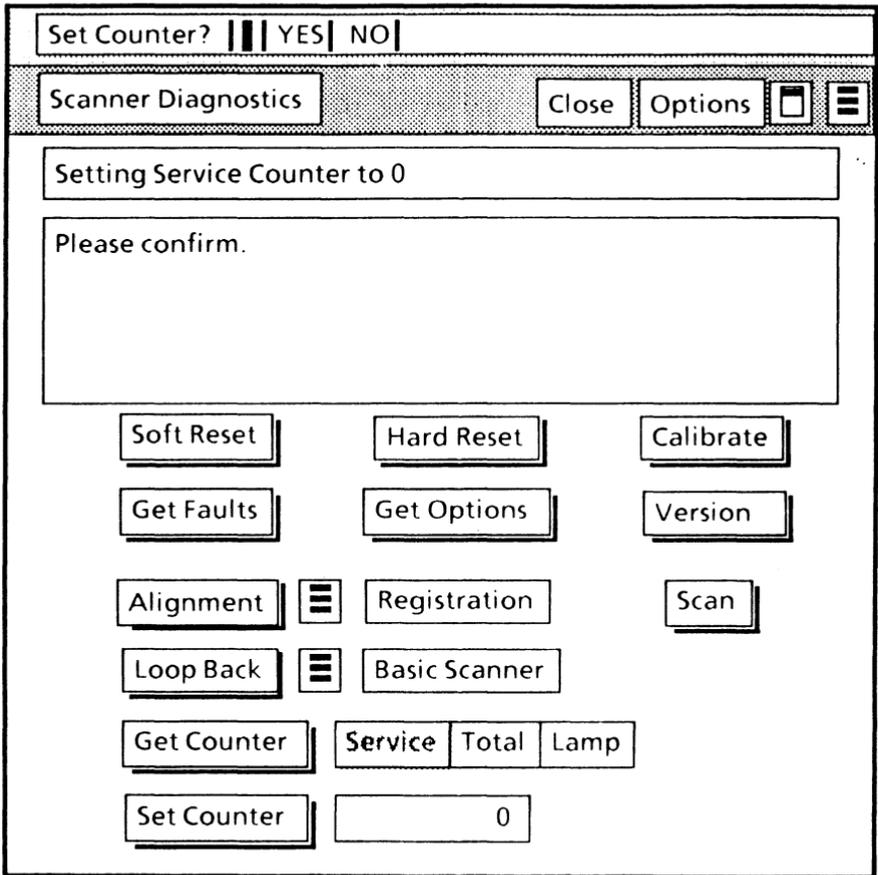
▌Figure 9-30   Scanner On-Line Set Counter▌

Notes:

Scanner Off-Line Diagnostics

Although running Scanner Off-Line Diagnostics is identical to running Scanner On-Line Diagnostics, the off-line tests display differently on the screen. (For a description of each test, refer to the Scanner On-Line Diagnostics section of this chapter.) Illustrations of each off-line test are shown in this section.

The scanner software must be installed on the 6085, and the scanner must be powered on, to perform Scanner Diagnostics.

The Scanner Off-Line Diagnostics is loaded from floppy disks. The Scanner Off-Line Diagnostics tests are selected from the diagnostic window. The five test selections are Reset, Calibrate, Loopback Tests, Get Options, and Get Faults.

Like the Workstation Off-Line Diagnostics, the Scanner Off-Line Diagnostics use a menu-driven user interface which requires minimum typing by the user. Explanations are provided at all selection points when you type <?>. Test selections are provided for the User (customer), the System Administrator, and Technical Support (CSR, Systems Analyst, etc.).

The System Administrator and Technical Support levels require passwords to use their respective tools. (The System Administrator level password is **rgmsn** and the Technical Support level password is **rexifsn**.)

The test selections for each class of user are:

Scanner Diagnostics
  1 - Reset
  2 - Calibrate
  3 - Loopback Tests
  4 - Get Options
  5 - Get Faults
  6 - Go to Previous Menu
Please enter selection:

If a diagnostic status code appears, refer to the Diagnostic Status Code Tables at the end of this chapter for a description of each code.

Loading Off-Line Scanner Diagnostics From Floppy Disk

1. Press B RESET on the processor front panel and insert the diagnostic floppy disk labeled "System Bootfile" in the floppy disk drive.
2. Press <F2> when the boot softkeys appear on the display.
3. Respond to the *"Is the Required Disk now loaded? Y"* prompt by inserting the diagnostics floppy disk labeled "Pro Imager Diagnostics." Press <Return> when the disk has been inserted.
4. Type the number corresponding to the desired "Class of User" and press <Return>.
5. Type in the appropriate password, if necessary.
6. Type the number corresponding to the desired test selection and press <Return>.

Initial Scanner Off-Line Diagnostics Menu

The Diagnostic Window contains two sections when running a test. The top section contains the Repetitive Test Count Selections. The bottom section provides messages while a particular test is running. The bottom section also displays the results or status of the test. Figure 9-31 is an illustration of the initial Scanner Off-Line Diagnostics window.
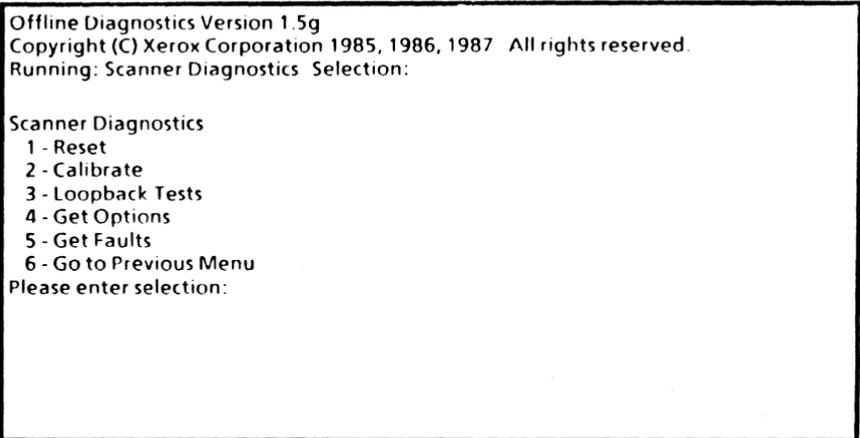
```
Offline Diagnostics Version 1.5g
Copyright (C) Xerox Corporation 1985, 1986, 1987   All rights reserved.
Running: Scanner Diagnostics  Selection:

Scanner Diagnostics
  1 - Reset
  2 - Calibrate
  3 - Loopback Tests
  4 - Get Options
  5 - Get Faults
  6 - Go to Previous Menu
Please enter selection:
```

Figure 9-31   Scanner Off-Line Diagnostic Window

Reset

From the Scanner Diagnostics Window, type **1** and press <Return> to select the Reset options. The Reset Options are *Send Software Reset* and *Activate Hardware Reset.* (The Reset options are identical to the Scanner On-Line Soft Reset and Hard Reset selections.) The first two messages when selecting either option are:

How many times do you wish to run the test? 1

Shall I stop and ask for your input if a problem is found? Y

```
Offline Diagnostics Version 1.5g
Copyright (C) Xerox Corporation 1985, 1986, 1987. All rights reserved.
Running: Scanner Diagnostics  Selection: Reset

Reset
  1 - Send Software Reset
  2 - Activate Hardware Reset
  3 - Go to Previous Menu
Please enter selection: 1


How many times do you wish to run the test? 1
```

Figure 9-32 Reset Options

After answers are given to these two questions, a new window appears with the Repetitive Test Count Information and the message *"Are you sure? Y."* Press <Return> to begin the test. (If <N> is typed, the test is cancelled and the window returns to the previous window.) If a fault occurs while the

test is running, a message will appear in the bottom section of the window.

Figure 9-33 shows an example of the Send Software Reset window, and Figure 9-34 shows an example of the Activate Hardware Reset window.

```
Offline Diagnostics Version 1.5g
Copyright (C) Xerox Corporation 1985, 1986, 1987. All rights reserved.
Running: Scanner Diagnostics  Selection: Send Software Reset

Repetitive Test Count Information
  Desired number of test repetitions: 1      Stop and ask for input on errors: Yes
  Number of test repetitions completed: Ø  Number of error stops: Ø
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Resetting . . . and running the full reset diagnostics . . .
. . . Done.
```

Figure 9-33   Send Software Reset

```
Offline Diagnostics Version 1.5g
Copyright (C) Xerox Corporation 1985, 1986, 1987. All rights reserved.
Running: Scanner Diagnostics  Selection: Activate Hardware Reset

Repetitive Test Count Information
  Desired number of test repetitions: 1      Stop and ask for input on errors: Yes
  Number of test repetitions completed: Ø  Number of error stops: Ø
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Resetting . . . and running the full reset diagnostics . . .
. . . Done.
```

Figure 9-34   Activate Hardware Reset

Calibrate

From the Scanner Diagnostics Window, type 2 and press <Return> to select the Calibrate option. (This option is identical to the Scanner On-Line Calibrate selection.) The first two messages when selecting this option are:

How many times do you wish to run the test? 1

Shall I stop and ask for your input if a problem is found? Y

```
Offline Diagnostics Version 1.5g
Copyright (C) Xerox Corporation 1985, 1986, 1987. All rights reserved.
Running: Scanner Diagnostics Selection:

Scanner Diagnostics
  1 - Reset
  2 - Calibrate
  3 - Loopback Tests
  4 - Get Options
  5 - Get Faults
  6 - Go to Previous Menu
Please enter selection: 2

Shall I stop and ask for your input if a problem is found? Y
```

Figure 9-35 Selecting the Calibrate Option

After answers are given to these two questions, a new window appears with the Repetitive Test Count Information and the message "*Are you sure? Y.*" Press <Return> to begin the test. (If <N> is typed, the test is cancelled and the window returns to the previous window.) If a fault occurs while the test is running, a message appears in the bottom section of the window.

Figure 9-36 shows an example of the Calibrate window.

```
Offline Diagnostics Version 1 5g
Copyright (C) Xerox Corporation 1985, 1986, 1987. All rights reserved.
Running: Scanner Diagnostics  Selection: Calibrate

Repetitive Test Count Information
  Desired number of test repetitions: 1       Stop and ask for input on errors: Yes
  Number of test repetitions completed: Ø  Number of error stops: Ø
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Calibrating . . .
. . . Done.
```
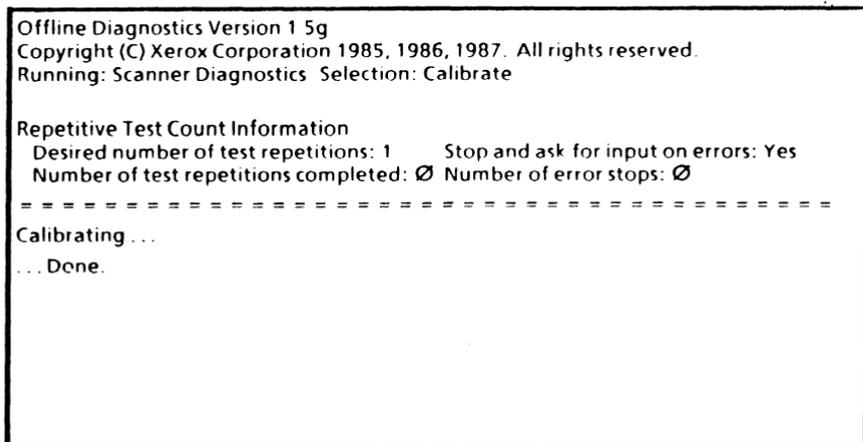
Figure 9-36 Calibrate Window

Loopback Tests

From the Scanner Diagnostics Window, type **3** and press <Return> to select the Loopback Test options. The options are *Basic Scanner Loopback* and *Filter Board Option Loopback*. (The Loopback Tests are similar to the Scanner On-Line Loop Back selection.) The first two messages when selecting either test are:

How many times do you wish to run the test? 1

Shall I stop and ask for your input if a problem is found? Y

```
Offline Diagnostics Version 1.5g
Copyright (C) Xerox Corporation 1985, 1986, 1987. All rights reserved.
Running: Scanner Diagnostics  Selection:

Loopback Tests
  1 - Basic Scanner Loopback
  2 - Filter Board Option Loopback
  3 - Go to Previous Menu
Please enter selection: 1

Shall I stop and ask for your input if a problem is found? Y
```

Figure 9-37 Selecting the Loopback Tests Option

After answers are given to these two questions, a new window appears with the Repetitive Test Count Information and the message *"Are you sure? Y."* Press <Return> to begin the test. (If <N> is typed, the test is cancelled and the window returns to the previous window.) If a fault occurs while the test is running, a message appears in the bottom section of the window.

Figure 9-38 shows an example of the Basic Scanner Loopback window, and Figure 9-39 shows an example of the Filter Option Board Loopback window.

```
Offline Diagnostics Version 1.5g
Copyright (C) Xerox Corporation 1985, 1986, 1987. All rights reserved.
Running: Scanner Diagnostics  Selection: Basic Scanner Loopback

Repetitive Test Count Information
   Desired number of test repetitions: 1      Stop and ask for input on errors: Yes
   Number of test repetitions completed: Ø  Number of error stops: Ø
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Running the selected loopback test ...  in 5 parts ...
. . . 1 . . .
. . . 2 . . .
. . . 3 . . .
. . . 4 . . .
. . . 5 . . .
. . . Done.
```

Figure 9-38 Basic Scanner Loopback Test

```
Offline Diagnostics Version 1.5g
Copyright (C) Xerox Corporation 1985, 1986, 1987. All rights reserved.
Running: Scanner Diagnostics  Selection: Filter Board Option Loopback

Repetitive Test Count Information
   Desired number of test repetitions: 1      Stop and ask for input on errors: Yes
   Number of test repetitions completed: Ø  Number of error stops: Ø
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Running the selected loopback test ...  in 2 parts ...
. . . 1 . . .
. . . 2 . . .
. . . Done.
```

Figure 9-39 Filter Board Option Loopback Test

NOTE: When the Filter Option Loop Back is selected, the Basic Scanner Loop Back will start automatically if it has not been performed prior to selecting the Filter Option Loop Back test.

Get Options

From the Scanner Diagnostics Window, type **4** and press <Return> to choose the Get Options selection. (This is identical to the Scanner On-Line Get Options selection.)

```
Offline Diagnostics Version 1.5g
Copyright (C) Xerox Corporation 1985, 1986, 1987  All rights reserved.
Running: Scanner Diagnostics  Selection: Get Options

Scanner Diagnostics
  1 - Reset
  2 - Calibrate
  3 - Loopback Tests
  4 - Get Options
  5 - Get Faults
  6 - Go to Previous Menu
Please enter selection: 4

= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Scanner Options Installed:
    Filter Board option is present.
```

Figure 9-40 Get Options Selection

Get Faults

From the Scanner Diagnostics Window, type 5 and press <Return> to choose the Get Faults selection. (This is identical to the Scanner On-Line Get Faults selection.)

```
Offline Diagnostics Version 1 5g
Copyright (C) Xerox Corporation 1985, 1986, 1987  All rights reserved.
Running: Scanner Diagnostics  Selection: Get Faults

Scanner Diagnostics
  1 - Reset
  2 - Calibrate
  3 - Loopback Tests
  4 - Get Options
? 5 - Get Faults
  6 - Go to Previous Menu
Please enter selection:

= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
*****Scanner's accumulated error list:
Error # 1H, 3H, 4H, CH
```

Figure 9-41   Get Faults Selection

Notes:

Diagnostic Status Codes

Table 9-1   Video Control/Interface Error Codes

Code	Message	Description
1H	SerialPortError	VC/I RS-485 serial port transmission test failed self-test
2H	ShadingRAMError	Shading/Histogram memory test failed self-test
3H	PingRAMError	Ping scan line buffer memory test failed self-test
4H	PongRAMError	Pong scan line buffer memory test failed self-test
5H	ScalingRAMError	Scaling/Interpolation memory test failed self-test
6H	ScreeningRAMError	Screening/Thresholding memory test failed self-test
7H	FIFORAMError	FIFO buffer memory test failed self-test
8H	FIFOControllerError	FIFO controller test failed self-test
9H	PingAddressFault	Ping buffer address counter failed self-test
AH	PongAddressFault	Pong buffer address counter failed self-test
CH	InputVideoPathError	Video path from shading to Ping/Pong buffers failed self-test
DH	OutputVideoPathError	Video path from Ping/Pong buffers to FIFO buffer failed self-test

Table 9-2 Pre-Processor/Scanning Error Codes

Code	Message	Description
21H	OffsetDACError	VPP channel imbalance offset DAC's failed to calibrate
22H	LICSetpointError	Lamp intensity output cannot be adjusted
23H	ShadingError	Pixel gain correction values out of range
24H	LampWDTError	Illumination lamp on too long
25H	LampIntensityError	Illumination lamp not at proper intensity

Table 9-3 Motor Driver Error Codes

Code	Message	Description
60H	MDCommError	RS-485 communications from the VC/I to the Motor Driver failed
61H	MDXmitError	RS-485 communications self-test with the Motor Driver failed
63H	MDXmitOverloadError	Motor driver RS-485 communications transmitter overloaded
64H	MDOvertempError	Motor driver exceeds operating temperature range
65H	MDOffsetCurrentError	Motor driver offset current out of range
66H	MDFarLimitError	Carriage position incorrect - carriage @ far limit switch
67H	MDNearLimitError	Carriage position incorrect - carriage @ near limit switch
68H	MDControlCurrentError	Motor Driver control hardware malfunction
69H	MDCarriageInitError	Motor Driver did not detect home position during initialization

Table 9-4 Filter/Histogram Error Codes

Code	Message	Description
80H	IPMCommError	RS-485 communications from the VC/I to the Filter/Histogram failed
81H	IPMXmitError	RS-485 communications self-test with the Filter/Histogram failed
83H	IPMXmitOverloadError	Filter/Histogram RS-485 communications transmitter overloaded
84H	FilterEOLError	Filter end of line interrupt failed to switch
85H	FilterAddressError	Filter scan line buffer address counter failed self-test
86H	FilterPipelinePathError	Filter pipeline data path failed self-test
87H	FilterSlowScanPathError	Filter slow scan data path failed self-test
88H	FilterFastScanPathErrorFilter	Filter fast scan data path failed self-test

Table 9-5   Software Problem Codes

Code	Message	Description
F0	Undefined Board Problem	Non-fatal problem found during self test. This code indicates a problem was found by the scanner during reset self-test. (Using *Get Faults* will list the accumulated error codes.)
F1	VC/I Board Problems	Failed basic loopback test.
F2	VC/I Board Problems	Scanner is connected and on, but will not communicate.
F3	VC/I Board Problems	Software timeout waiting for basic loop back scanlines to be returned. This will be displayed if the scanner hangs during basic loop back tests.
F6	Filter Board Problems	Failed filter loopback test.
F7	Filter Board Problems	Software timeout waiting for prescan values.
F8	Filter Board Problems	Software timeout waiting for filter loop back scanlines to be returned.
FB	Multiple Board Communications Problems	Self-test shows more than one RS-485 error. This code is displayed if multiple RS-485 Serial Communication errors are found.
FC	Multiple Board Problems	Failing scanner self-test multiple board problem

Notes:

10. CARTRIDGE TAPE DIAGNOSTICS

Introduction

The optional Cartridge Tape Drive is used as a backup unit. The tape medium provide increased performance for backing up large volumes of data. A standard cartridge tape will back up approximately 40MB o information.

The 6085 must have a floppy disk drive, B hardware, and ViewPoint 2.0 software to support the cartridge tape drive. The cartridge tape drive is not a bootable device.

While tape operations are occurring, the workstation will operate as if the Ethernet cable had been disconnected. This is because the Ethernet and tape drive use the same internal hardware for communication. To maintain the desired tape read and write speeds, the tape must have full access to this hardware. To ensure full access, any network operations (filing, remote printing and mailing) attempted during tape operations may fail in the same way as they would if the Ethernet cable had been disconnected.

NOTE: Cartridge Tape On-Line Diagnostics are located in Chapters 6 and 7 of this handbook.

This chapter is divided into the following areas of Cartridge Tape Diagnostics:

- Cartridge Tape Off-Line Diagnostics: These diagnostics are exercisers and tests used by the service representative. The exercisers and tests include the Utility Options, a Confidence Test, and Surface Verification of the tape.

- Cursor Codes and Error Messages: The cartridge tape cursor codes are contained in Table 10-1. The tape operations error messages are contained in Table 10-2.

NOTE: There are no Extended Isolation Boot Diagnostics for the Cartridge Tape.

Cartridge Tape Layout

Before discussing the cartridge tape off-line diagnostics, it is important to understand the layout of the tape. A standard cartridge tape is made up of 12 logical data streams. The logical data streams are recorded on the tape in a serpentine manner (Figure 10-1).

BOT* ———————————————————————— EOT†
                    Forward direction of tape travel →

Stream 1 ———————————————————————— →
Stream 7 ———————————————————————— →
Stream 2 ———————————————————————— ←
Stream 8 ———————————————————————— ←
Stream 3 ———————————————————————— →
Stream 9 ———————————————————————— →
Stream 4 ———————————————————————— ←
Stream 10 ———————————————————————— ←
Stream 5 ———————————————————————— →
Stream 11 ———————————————————————— →
Stream 6 ———————————————————————— ←
Stream 12 ———————————————————————— ←
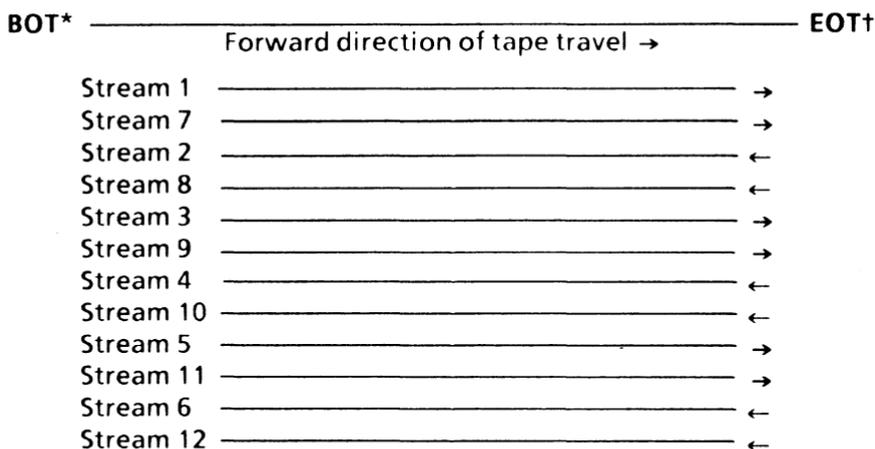
Figure 10-1 Serpentine Recording Method
* Beginning of Tape   † End of Tape

Each stream is divided into 245 tracks. Each track is divided into 32 pages (sectors).

The first track (Track 0) of stream 1 is reserved for the Bad Page Table. A bad page on Track 0 cannot be entered into the Bad Page Table; therefore, if Track 0 contains a bad page that cannot be repaired by the Scavenge Tape Utility Option, the tape must be replaced.
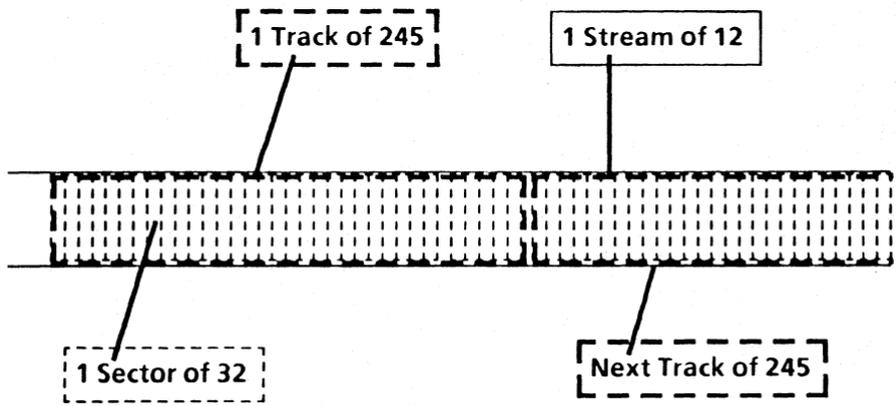
Figure 10-2 Tracks and Sectors (pages) on a Stream

Cartridge Tape Off-Line Diagnostics

Like the Workstation Off-Line Diagnostics, the Cartridge Tape Off-Line Diagnostics has a menu-driven user interface which minimumizes typing input. Explanations are provided at all selection points when you type <?>.

Different test selections with various capabilities are provided for the User (customer), the System Administrator, and Technical Support (CSE, Systems Analyst, etc.) Although the User level of Off-Line Diagnostics are thorough, they avoid the destructive tools.

The System Administrator and Technical Support levels require passwords to use their respective tools.

The User display selections are:

CARTRIDGE TAPE DIAGNOSTICS
   1 - Utility Options
   2 - Confidence Test
   3 - Tape Surface Verify
   4 - Go to previous menu

The System Administrator display selections are:

CARTRIDGE TAPE DIAGNOSTICS
   1 - Utility Options
   2 - Confidence Test
   3 - Tape Surface Verify
   4 - Display Options
   5 - Go to previous menu

The Technical Support display selections are:

CARTRIDGE TAPE DIAGNOSTICS
1- Utility Options
2- Confidence Test
3- Tape Surface Verify
4- Exerciser
5- Write Known Data
6- Read Known Data
7- Display Options
8- Command File Options
9- Subtest Options
10- Go to Previous Menu
Please enter selection:

If a diagnostic cursor code appears, refer to the Diagnostic Cursor Code Table at the end of this chapter for a description and recovery action.

If an error message appears, refer to the Tape Operations Error Message Table at the end of this chapter for a description and recovery action.

Loading the Cartridge Tape Off-Line Diagnostics

The Cartridge Tape Off-Line Diagnostics can b
loaded from floppy disks or from the network
This section contains display examples for th
Cartridge Tape Off-Line Diagnostics.

Loading the Cartridge Tape Off-Line Diagnostics From Floppy Disk

1. Press B RESET on the processor front pane
    and insert the diagnostic floppy disl
    labeled "System Bootfile" in the flopp
    disk drive.
2. Press <F2> when the boot softkey
    appear on the display.
3. Respond to the *Is the Required Disk nov*
    loaded? Y" prompt by inserting th
    diagnostics floppy disk labeled "Cartridg
    Tape Diagnostics." Press <Return>
    when the disk has been inserted.
4. Type the number corresponding to th
    desired "Class of User" and pres
    <Return>.
5. Type in the appropriate password, i
    necessary.
6. Type the number corresponding to th
    desired test selection and pres
    <Return>.

Loading the Cartridge Tape Off-Line Diagnostics From the Network

1. Press B RESET on the processor front panel.
2. Press <F3> when the boot softkeys appear on the display.
3. When the main menu appears, type the number corresponding to the appropriate option and press <Return>.
4. Type the number corresponding to the desired "Class of User" and press <Return>.
5. Type in the appropriate password, if necessary.
6. Type the number corresponding to the desired test selection, and press <Return>.

NOTE: Press <STOP> to return to the previous menu.

Inserting a Cartridge Tape into the Cartridge Tape Drive

Some of the Cartridge Tape Diagnostics require insertion of a cartridge. Whether it is a scratch cartridge, the problem cartridge, or the Diagnostic Data Cartridge, be sure that the cartridge is write-enabled except for the **Tape Surface Verify** test. Figure 10-3 shows an example of a write-enabled cartridge. Data may be written to write-enabled cartridges.

Figure 10-4 shows an example of a write-protected cartridge. The arrow points to the word "SAFE". Data cannot be written to write-protected cartridges.
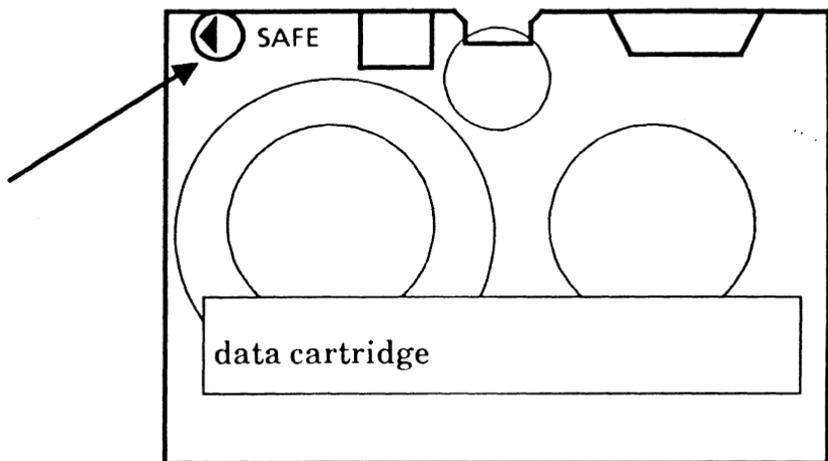
Figure 10-3 A Write-Enabled Cartridge
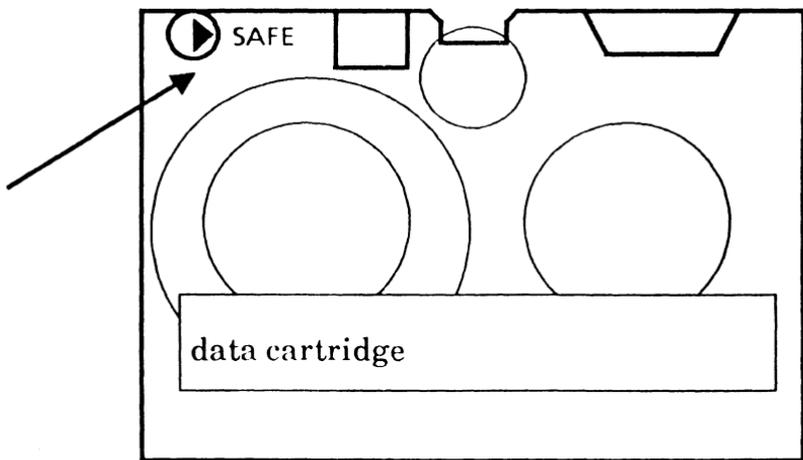
Figure 10-4 A Write-Protected Cartridge

Notes:

Utility Options

This command is available to the Normal Use⌐ System Administrator, and Technical Suppo⌐ classes of users.

From the Cartridge Tape Diagnostics Windov type 1 and press < Return > to select the Utili⌐ Options.

```
UTILITY OPTIONS
  1 - Retension Tape
  2 - Format Tape
  3 - Log Bad Page
  4 - Scavenge Tape
  5 - Calculate Floppy Tape Checksum
  6 - Exit
Enter choice number:
```

Figure 10-5 Utility Options

Retension Tape

Figure 10-6 shows an example of the Retension Tape window. This utility resets the tension of the tape around the spools. A tape should be retensioned when it:

● is new (the Format Utility resets the tension automatically)
● has been in storage
● has had eight hours of use

The default pass count is 1. One pass equals three minutes run time. The supported pass count is 1 through 32000.

```
RETENSIONING TAPE

  Total pass count: 1
  Total run time: 3 mins

Type any character to continue:
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
SUBTEST:


DONE.
```
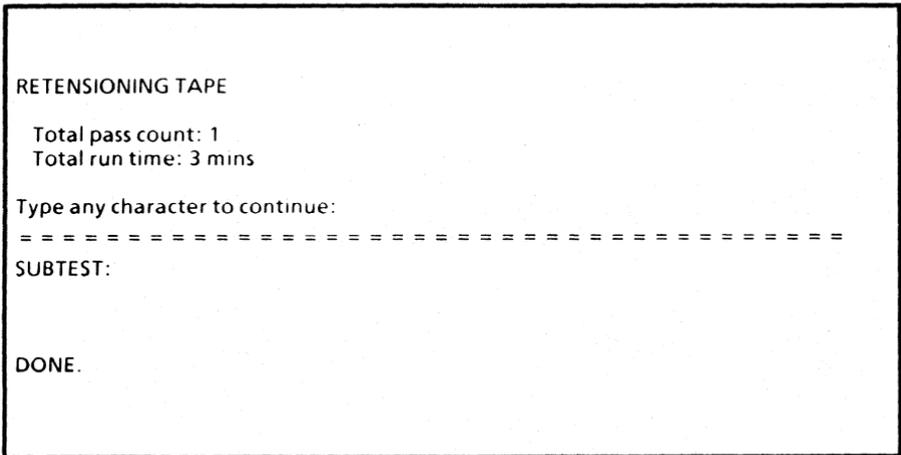
Figure 10-6 Retension Tape

The Retension Tape Utility is identical to the Reset Tension option of Cartridge Tape On-Line Diagnostics.

Format Tape

Figure 10-7 shows an example of the Format Tape window. A tape should be formatted when it is new. This command writes headers (streams, tracks and pages) on the tape, similar to those on a floppy disk.

CAUTION

Formatting will destroy the contents of the tape cartridge.

After selecting this option, you will be asked to name the tape. Type in the name and press <Return>.

The pass count is 1. One pass equals 45 minutes run time, during which time the workstation is dedicated solely to this activity.

```
FORMAT TAPE

  Total pass count: 1
  Total run time: 45 mins

Type any character to continue:
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
```
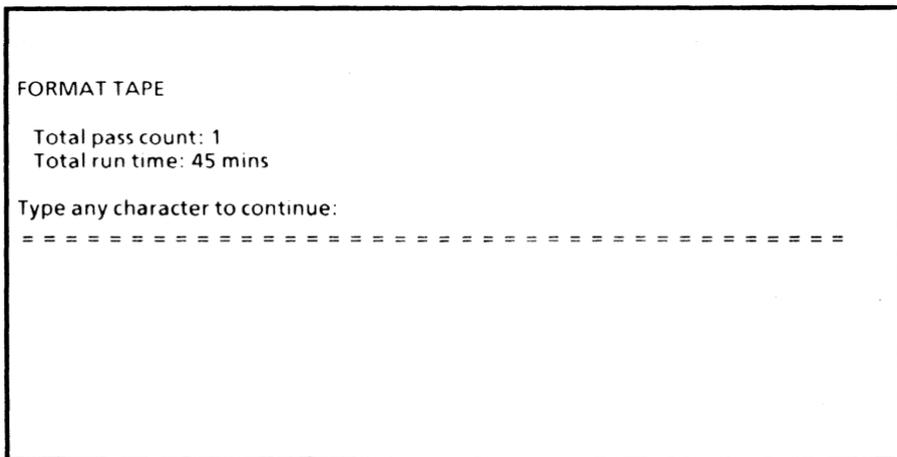
Figure 10-7 Format Tape

The Format Tape Utility is identical to the Format option of Cartridge Tape On-Line Diagnostics.

Log Bad Page

Figure 10-8 shows an example of the Log Bad Page window. After selecting this option, you will be asked to enter the failing page number. The page number is logged into the Bad Page Table of the cartridge tape.

Pages 1 through 32 (Track 0) must be flawless. The supported page numbers are 33 through 94080.

```
UTILITY OPTIONS
  1 - Retension Tape
  2 - Format Tape
  3 - Log Bad Page
  4 - Scavenge Tape
  5 - Calculate Floppy Tape Checksum
  6 - Exit
Enter choice number: 3
Bad page number:
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
LOG BAD PAGE
```
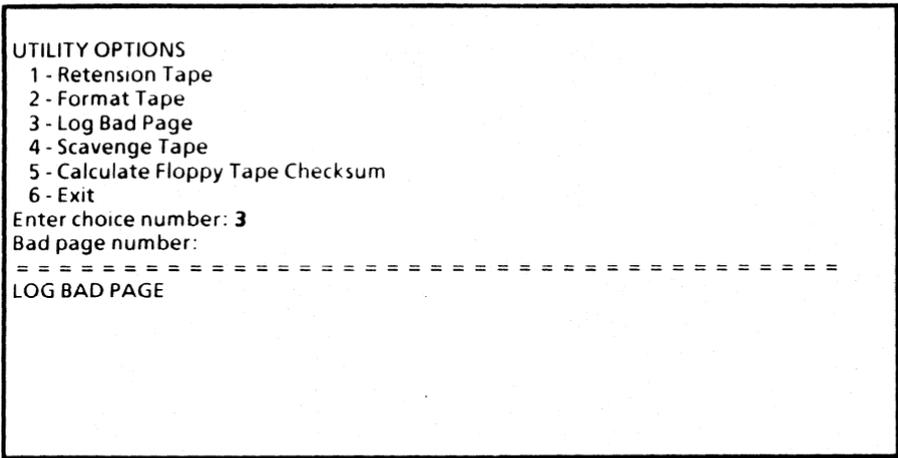
Figure 10-8   Log Bad Page

Scavenge Tape

Figure 10-9 shows an example of the Scavenge Tape window. This utility causes the internal structure of the tape to be rebuilt. This is necessary if the workstation has crashed with the tape drive open, or if the user has removed a tape from the drive before closing the window.

SUCCESSFUL REPAIR will be displayed when the scavenge completes successfully. If the scavenge is unable to repair the file, *UNSUCCESSFUL REPAIR* will be displayed.

The Scavenge Tape Utility is identical to the Scavenge option of Cartridge Tape On-Line Diagnostics.

```
UTILITY OPTIONS
  1 - Retension Tape
  2 - Format Tape
  3 - Log Bad Page
  4 - Scavenge Tape
  5 - Calculate Floppy Tape Checksum
  6 - Exit
Enter choice number: 4
Type any character to continue:
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
SCAVENGE TAPE


Running Scavenger
```

Figure 10-9 Scavenge Tape

Confidence Test

This command is available to the Normal User, the System Administrator, and the Technical Support classes of users.

From the Cartridge Tape Diagnostics Window, type **2** and press **<Return>** to select the Confidence Test. The Confidence Test verifies and exercises the cartridge tape drive logic.

The default passes to run is 1. One pass equals 30 minutes.

This test requires a Diagnostic Data Cartridge. Any other tape cartridge will create erroneous results. (The Diagnostic Data Cartridge contains diagnostic information on Streams 6 and 7.)

```
CARTRIDGE TAPE DIAGNOSTICS
  1 - Utility Options
  2 - Confidence Test
  3 - Tape Surface Verify
  4 - Go to previous menu
Please enter selection: 2
Passes to run: 1
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
NOTE:  This test requires a Diagnostic Data Cartridge
Any other tape cartridge will create erroneous results.


CONFIDENCE TEST
```

Figure 10-11 Confidence Test

Tape Surface Verify

This command is available to the Normal User, the System Administrator, and the Technical Support classes of users.

From the Cartridge Tape Diagnostics Window, type **3** and press **< Return >** to select the Surface Verification Utility. Tape Surface Verify verifies the entire tape surface for errors. It looks for soft and hard errors, ignores bad pages which are logged in the bad page table, displays soft and hard read errors on the screen as they are encountered, and displays a summary of the errors at the end of the verification.

The default passes to run is 1. One pass equals 25 minutes.

```
CARTRIDGE TAPE DIAGNOSTICS
  1 - Utility Options
  2 - Confidence Test
  3 - Tape Surface Verify
  4 - Go to previous menu
Please enter selection: 3
Passes to run: 1
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
SURFACE VERIFICATION
```
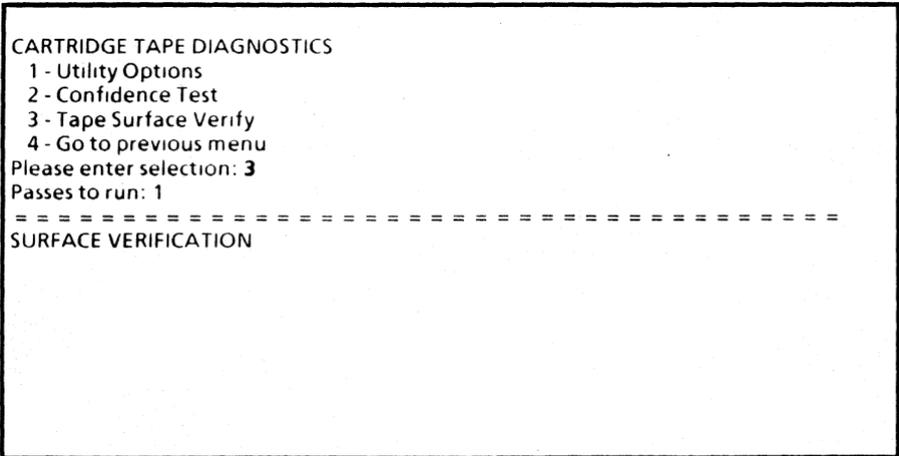
Figure 10-12 Tape Surface Verify

Display Options

This command is available to the System Administrator and Technical Support classes of users.

```
DISPLAY OPTIONS
  1 - Display Error Log
  2 - Display soft read errors
  3 - Display hard read errors
  4 - Display Trace Table
  5 - Display read ID Buffer
  6 - Display Write Buffer
  7 - Display Read Buffer
  8 - Display Bad Page Table
  9 - Exit
Please enter selection:
```

Figure 10-13 Display Options Menu

The following are descriptions of each option.

1 - Displays the last errors encountered.

2 - Displays the last encountered soft read errors.

3 - Displays the last encountered hard read errors.

4 - Displays the last executed I/O commands and status.

5 - Displays the entire read ID buffer.

6 - Displays the last written data.

7 - Displays the last read data.

8 - Displays the bad pages in the bad page table.

9 - Returns to the previous menu.

Display Error Log

Figure 10-14 shows an example Display Error Log entry. The purpose of this log is to further isolate a hardware problem. The Error Log stores each I/O error in sequence as it is encountered. When the error log is full, it starts at the beginning again, overwriting earlier errors.

The error log contains all the I/O commands, all parameters for the I/O commands, and all of the returned status when the I/O command fails. Each entry also contains an entry count, a time stamp, a remaining pass count, and a subtest number. The number of entries contained in the error log is 64.

```
ENTRY NUMBER: 12              Remaining pass count: 1
Time: 13:04:27                Subtest number: 48

COMMAND:
ReadSector [track: 1490, sector: 1, use single buffer(y/n): No
sector count: 128, clear buffer first(y/n): Yes, verify read data(y/n): Yes,
data type: diagnostic, try count: 1];
RETURNED PARAMETERS:
track: 1494, sector: 20, remaining sector count: 109,
times retried: 0
RETURNED STATUS: Data error
TOO MANY SOFT ERRORS IN SUBTEST

Type any character to continue:
```

Figure 10-14 Display Error Log

Display Soft Read Errors

Figure 10-15 shows a sample window for the Display Soft Read Errors option. The purpose of this option is to display or redisplay encountered errors to further isolate a hardware or media problem.

```
DISPLAY OPTIONS
  1 - Display Error Log
  2 - Display soft read errors
  3 - Display hard read errors
  4 - Display Trace Table
  5 - Display read ID Buffer
  6 - Display Write Buffer
  7 - Display Read Buffer
  8 - Display Bad Page Table
  9 - Exit
Please enter selection: 2
Type any character to continue:
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
SOFT READ ERROR DISPLAY
Page: 14272, stream: 1, track: 0, sector: 1, times failed: 1
```

Figure 10-15 Display Soft Read Errors

Display Hard Read Errors

Figure 10-16 shows a sample window for the Display Hard Read Errors option. The purpose of this option is to display or redisplay encountered errors to further isolate a hardware or media problem.

```
DISPLAY OPTIONS
  1 - Display Error Log
  2 - Display soft read errors
  3 - Display hard read errors
  4 - Display Trace Table
  5 - Display read ID Buffer
  6 - Display Write Buffer
  7 - Display Read Buffer
  8 - Display Bad Page Table
  9 - Exit
Please enter selection: 3
Type any character to continue:
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
HARD READ ERROR DISPLAY
Page: 14272, Stream: 02, Track: 201, Sector: 01
```

Figure 10-16 Display Hard Read Errors

Display Trace Table

Figure 10-17 shows a sample window for th
Display Trace Table option. The purpose of thi
option is to identify and isolate I/O comman
sequence problems.

```
DISPLAY OPTIONS
  1 - Display Error Log
  2 - Display soft read errors
  3 - Display hard read errors
  4 - Display Trace Table
  5 - Display read ID Buffer
  6 - Display Write Buffer
  7 - Display Read Buffer
  8 - Display Bad Page Table
  9 - Exit
Please enter selection: 4
Type any character to continue:
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
COMMAND: Read Sector [track: 0, sector: 1, use single buffer (y/n): No, sector count:
3, clear buffer first (y/n): Yes, verify read data (y/n): No, try count: 3];
RETURNED PARAMETERS: track: 0, sector: 1, remaining sector count: 3, times retried:
2
RETURNED STATUS: Record not found
```

Figure 10-17 Display Trace Table

Display Read ID Buffer

Figure 10-18 shows a sample window for the Display Read ID Buffer option. The purpose of this option is to verify that the Read ID I/O command worked properly.

```
DISPLAY OPTIONS
  1 - Display Error Log
  2 - Display soft read errors
  3 - Display hard read errors
  4 - Display Trace Table
  5 - Display read ID Buffer
  6 - Display Write Buffer
  7 - Display Read Buffer
  8 - Display Bad Page Table
  9 - Exit
Please enter selection: 5
Type any character to continue:
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
THE ID BUFFER IS EMPTY
```

Figure 10-18 Display Read ID Buffer

Display Write Buffer

Figure 10-19 shows a sample window for the Display Write Buffer option. The purpose o this option is to compare the written data to the read data for better isolation of dat errors. The data and the byte count are displayed in a hexadecimal format.

```
DISPLAY OPTIONS
  1 - Display Error Log
  2 - Display soft read errors
  3 - Display hard read errors
  4 - Display Trace Table
  5 - Display read ID Buffer
  6 - Display Write Buffer
  7 - Display Read Buffer
  8 - Display Bad Page Table
  9 - Exit
Please enter selection: 6
Type any character to continue:
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
THE WRITE BUFFER IS EMPTY
```

Figure 10-19   Display Write Buffer

Display Read Buffer

Figure 10-20 shows a sample window for the Display Read Buffer option. The purpose of this option is to compare the read data to the written data for better isolation of data errors. The data and the byte count are displayed in a hexadecimal format.

```
DISPLAY OPTIONS
  1 - Display Error Log
  2 - Display soft read errors
  3 - Display hard read errors
  4 - Display Trace Table
  5 - Display read ID Buffer
  6 - Display Write Buffer
  7 - Display Read Buffer
  8 - Display Bad Page Table
  9 - Exit
Please enter selection: 7
more? (Yes/No): Y
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
READ BUFFER DISPLAY
HEX COUNT    0      1      2      3      4      5      6      7
*******   *******************************************
0000      0000   0000   0000   0000   0000   0000   0000   0000
0008      0000   0000   0000   0000   0000   0000   0000   0000
0010      0000   0000   0000   0000   0000   0000   0000   0000
0018      0000   0000   0000   0000   0000   0000   0000   0000
0020      0000   0000   0000   0000   0000   0000   0000   0000
0028      0000   0000   0000   0000   0000   0000   0000   0000
0030      0000   0000   0000   0000   0000   0000   0000   0000
0038      0000   0000   0000   0000   0000   0000   0000   0000
0040      0000   0000   0000   0000   0000   0000   0000   0000
0048      0000   0000   0000   0000   0000   0000   0000   0000
0050      0000   0000   0000   0000   0000   0000   0000   0000
0058      0000   0000   0000   0000   0000   0000   0000   0000
0060      0000   0000   0000   0000   0000   0000   0000   0000
0068      0000   0000   0000   0000   0000   0000   0000   0000
0070      0000   0000   0000   0000   0000   0000   0000   0000
0078      0000   0000   0000   0000   0000   0000   0000   0000
```

Figure 10-20   Display Read Buffer

Display Bad Page Table

Figure 10-21 shows a sample window for th Display Bad Page Table option.

During a normal tape operation, parts of th tape, called "pages," are often found to b unusable. As these are discovered, they ar added to the Bad Page Table. This comman can be used to see the current size of the tabl A tape should not be used when the number c bad pages approaches 100. A tape is no longe usable or recoverable when the number of ba pages reaches 256.

NOTE: Insert a formatted tape in the cartridg tape drive before selecting this option.

```
DISPLAY OPTIONS
  1 - Display Error Log
  2 - Display soft read errors
  3 - Display hard read errors
  4 - Display Trace Table
  5 - Display read ID Buffer
  6 - Display Write Buffer
  7 - Display Read Buffer
  8 - Display Bad Page Table
  9 - Exit
Please enter selection: 8
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
BAD SECTOR TABLE DISPLAY
Page: 14272, stream: 02, track: 201, sector: 01
Page: 31472, stream: 05, track: 003, sector: 17
Page: 38504, stream: 05, track: 223, sector: 09

Type any character to continue:
```

Figure 10-21   Display Bad Page Table

The Display Bad Page Table option is identic; to the Display Bad Sector Table option c Cartridge Tape On-Line Diagnostics.

Exerciser

This command is available to the Technical Support class of users. Figure 10-22 shows a sample window for the Exerciser command. The Exerciser command verifies and exercises the cartridge tape drive and controller using a formatted scratch tape. It executes extensive write and read I/O commands. It also identifies hard errors and excessive read errors.

CAUTION
The Exerciser will destroy the contents of the tape.

The default passes to run is 1. One pass equals 25 minutes run time.

```
EXERCISER

  Total pass count: 1
  Total run time: 25 mins

= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
SUBTEST:
Read/Verify data

Soft read error:
Page: 9723, stream: 2, track 58, sector: 27
```

Figure 10-22 Exerciser

Write Known Data

This command is available to the Technica
Support class of users. The Write Known Data
command writes a known data pattern on the
entire tape, to be used by the Read Known
Data command. The data pattern consists of a
page location, plus an incrementing data
pattern.

The test identifies soft read errors, hard read
errors, and hard errors. It logs all encountered
bad pages into the bad page table.

*NOTE: Insert a formatted tape in the cartridge
tape drive before selecting this option.*

CAUTION
*This command will destroy the contents of the
tape.*

The default passes to run is 1. One pass equals
90 minutes run time. The supported pass count
is 1 through 32000.

WRITE KNOWN DATA

Total pass count: 10   Remaining pass count: 5
Total run time: 15 hours   Remaining run time: 7 hours 30 minutes

SUBTEST
Write stream 5 with known data

Soft read error:
Page: 9723, stream: 2, track: 58, sector: 27

Figure 10-23 Write Known Data

Read Known Data

This command is available to the Technical Support class of users. This command reads and verifies the known data on the tape (from the Write Known Data command). This command also identifies hard errors.

NOTE: Insert a tape previously used with **Write Known Data** *in the cartridge tape drive before selecting this option.*

The default passes to run is 1. One pass equals 60 minutes run time. The supported pass count is 1 through 32000.

```
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
READ KNOWN DATA


SUCCESSFUL COMPLETION

NO SOFT ERRORS DETECTED
Type any character to continue
```

Figure 10-24 Read Known Data

Command File Options

This set of commands is reserved. Do not use the Command File Options.

Subtest Options

This set of commands is reserved. Do not use the Subtest Options.

Cursor Codes and Error Messages

Table 10-1 Cartridge Tape Cursor Codes

Code	Description	Recovery Action
0915	Software Error	Call the Xerox Systems Analyst
2821	Hardware Error	Check the IOP PWB, Tape Drive, Harness
2822	Hardware Error	Check the Tape Drive, Harness, IOP PWB
2823	Media or Hardware Error (too many soft read errors)	Check the Tape Drive, Harness, IOP PWB
2824	Media or Hardware Error (too many hard read errors)	Check the Tape Drive, Harness, IOP PWB
2825	I/O Command time out	Check the Tape Drive, Harness, IOP PWB, Mesa Processor, Backplane
2826	Retension Failure	Check the Tape Drive, Harness, IOP PWB
2827	Failure to read the Bad Page Table	Run the **Exerciser** using a scratch tape to verify the tape drive
2829	Real Time Clock Problem	Check the IOP PWB, Cursor Code FRU

Table 10-2 Tape Operations Error Messages

Message	Recovery Action
Unable to open - no tape hardware.	Install the cartridge tape drive hardware and change the System Configuration Utility
Unable to format - tape is damaged.	The tape cannot be formatted because there is some physical damage. Use another tape.
Unable to write - tape is write protected.	Any attempt to write to a write-protected tape will cause this message to be posted. Make sure the tape is write-enabled.
That tape is not formatted.	The tape system is expecting a formatted tape. Insert a formatted tape.
Incorrect tape. Please re-insert the original tape and retry that operation.	The tape has been changed in mid-session without using the **Change Tape** command.
A tape error occurred while reading the file.	Either the tape was damaged when the file was written, causing it to be unreadable now, or the tape has subsequently been damaged at the location containing the file which was being read. Resetting the tape tension (**Retension Tape**) may help.
The tape drive is not ready. Please make sure the tape is in the drive correctly.	Eject the tape and then re-insert the tape.

Table 10-2 Tape Operations Error Messages

Message	Recovery Action
That tape needs scavenging. Please scavenge before using that tape.	An inconsistency has been found in the internal structure of the tape. This may occur if the tape was removed from the drive without closing the window. Run the **Scavenge Tape** command.
An error has occurred in the tape drive hardware. Please retry, or call Service.	The hardware for the tape drive has malfunctioned. If retrying the operation does not succeed, call Service. (Refer to RAP 18.)
The tape format is damaged. Please reformat.	An internal error has occurred which has damaged the internal structure of the tape. The only way to restore the tape is to run the **Format Tape** command.
File not found.	The file to be copied to or from the tape drive is not present. The name of the file will be listed.

Notes:

Set VM and Control Store Parameters

The options are: Set Virtual Memory Size and Set Control Store size.

NOTE: *If your customer has the PC Option and/or LP Option, the Virtual Memory size should remain at 23 bits. If your customer has the SP Option, the Virtual Memory size should be changed to 24 bits.*

6085 PCS Set Control Store Size has two options: 4K and 8K. The default is 4K. The SP Option and the Versatec Expert System require the 8K Control Store.

■6085-2 PCS Select 16K.■

Set Hardware Version Number

■The options are: B0/B1, B2, and Set NEW Hardware Version. Do not use this utility unless you have upgraded the hardware to a B2 model.■

Recalculate and Display EEPROM Checksum

The options are: Checksum Override FALSE and Checksum Override TRUE. Because the EEPROM has a limit on the amount of writes, this option allows a Recalculation of the checksum with the choice of an actual Write operation to the EEPROM. TRUE allows a write of the checksum to the chip and displays the checksum; FALSE does not allow a write to the chip but displays the checksum to the user.

Read actual EEPROM contents and abort all modification

The temporary EEPROM changes are deleted upon confirmation.

Show modified EEPROM contents (in Hex format) to be written

An EEPROM table displays words 1 through 64, with numbers to the right of each. You can change the contents of the EEPROM by selecting Change Contents of EEPROM, and typing in a word number (in decimal), and then typing in data to put into the EEPROM in (Hex format).

Show modified EEPROM contents to be written

An EEPROM table displays the current system configuration, including words 1 through 24, with numbers to the right of each.

Write EEPROM with Manufacturing Defaults

NOTE: Never use this utility. It is for use by Manufacturing only.

Write EEPROM

The temporary EEPROM changes are written to the REAL EEPROM upon confirmation.

Introduction

This appendix provides information that is necessary to identify specific inoperable or missing applications, and procedures to replace the damaged software.

Tables A-1 through A-3 list the cursor codes that appear when specific applications being started on a workstation fail. These tables are categorized in the following way:

- Table A-1: Codes Beginning With 9999 and 76XX

- Table A-2: Codes Beginning With 9999 and 77XX

- Table A-3: Codes Beginning With 9999 and 78XX or 80XX

When an application cannot start, the application should be reinstalled using the procedures described at the end of this appendix.

Table A-1   Codes Beginning With 9999 and 76XX

9999, 76XX, followed by:	The application trying to start is:	Refer to the procedure titled:
0223 1901 1212 1215	Basic Workstation	"Replacing Damaged ViewPoint Basic Workstation Software"
0223 1919 2021 0606	Basic Workstation	"Replacing Damaged ViewPoint Basic Workstation Software"
0412 0915 1419 1605	Basic Workstation	"Replacing Damaged ViewPoint Basic Workstation Software"
0415 2205 1916 0503	Basic Workstation	"Replacing Damaged ViewPoint Basic Workstation Software"
1520 0805 1807 2125	Basic Workstation	"Replacing Damaged ViewPoint Basic Workstation Software"

Table A-2   Codes Beginning With 9999 and 77XX

9999, 77XX, followed by:	The application trying to start is:	Refer to the procedure titled:
0112 1206 0215 1616	Floppy Tool	"Replacing Damaged NetCom (or RemoteCom or Standalone) Software and ViewPoint Common Software"
0120 2018 0919 0315	Interscript Converter	"Replacing Damaged NetCom (or RemoteCom or Standalone) Software and ViewPoint Common Software"
0201 1909 0316 1809	Printing Common Software	"Replacing Damaged NetCom (or RemoteCom or Standalone) Software and ViewPoint Common Software"
0223 1904 0901 0703	Diagnostics	"Replacing Damaged NetCom (or RemoteCom or Standalone) Software and ViewPoint Common Software"
0223 1919 2021 0066	Unknown	"Replacing Damaged NetCom (or RemoteCom or Standalone) Software and ViewPoint Common Software" and "Replacing a Specific Damaged Application" (Note: Replace ALL applications.)
0315 1422 0518 2205	Conversion Common Software	"Replacing Damaged NetCom (or RemoteCom or Standalone) Software and ViewPoint Common Software"

Table A-2   Codes Beginning With 9999 and 77XX (Continued)

9999, 77XX, followed by:	The application trying to start is:	Refer to the procedure titled:
0321 1916 0315 1406	CUSP	"Replacing Damaged NetCom (or RemoteCom or Standalone) Software and ViewPoint Common Software"
0322 2015 1802 1900	RBS Conversion	"Replacing Damaged NetCom (or RemoteCom or Standalone) Software and ViewPoint Common Software"
0409 1911 1916 0103	Disk space warning	"Replacing Damaged NetCom (or RemoteCom or Standalone) Software and ViewPoint Common Software"
0513 0315 1319 1506	Terminal Emulation Common Software	"Replacing Damaged NetCom (or RemoteCom or Standalone) Software and ViewPoint Common Software"
0609 0512 0403 1514	Field Content	"Replacing Damaged NetCom (or RemoteCom or Standalone) Software and ViewPoint Common Software"
0615 1420 1307 1803	Font Manager	"Replacing Damaged NetCom (or RemoteCom or Standalone) Software and ViewPoint Common Software"

Table A-2 Codes Beginning With 9999 and 77XX (Continued)

9999, 77XX, followed by:	The application trying to start is:	Refer to the procedure titled:
0916 0315 1422 0514	Interpress	"Replacing Damaged NetCom (or RemoteCom or Standalone) Software and ViewPoint Common Software"
1215 0715 1400 0000	Logon	"Replacing Damaged NetCom (or RemoteCom or Standalone) Software and ViewPoint Common Software"
1405 2023 1518 1101	Network Access	"Replacing Damaged NetCom (or RemoteCom or Standalone) Software and ViewPoint Common Software"
1618 0914 2009 1407	Interpress	"Replacing Damaged NetCom (or RemoteCom or Standalone) Software and ViewPoint Common Software"
1805 0605 1805 1403	Reference Icons	"Replacing Damaged NetCom (or RemoteCom or Standalone) Software and ViewPoint Common Software"
1920 0118 1105 2502	Workstation Keyboards	"Replacing Damaged NetCom (or RemoteCom or Standalone) Software and ViewPoint Common Software"

Table A-2 Codes Beginning With 9999 and 77XX (Continued)

9999, 77XX, followed by:	The application trying to start is:	Refer to the procedure titled:
1920 0114 0401 1215	Standalone and RemoteCom	"Replacing Damaged NetCom (or RemoteCom or Standalone) Software and ViewPoint Common Software"
2001 0212 0523 0914	Table Windows	"Replacing Damaged NetCom (or RemoteCom or Standalone) Software and ViewPoint Common Software"

Table A-3   Codes Beginning With 9999 and 78XX or 80XX

9999, 78XX or 80XX, followed by:	The application trying to start is:	Refer to the procedure titled:
0223 1904 1515 0412	VP Free-Hand Drawing	"Replacing a Specific Damaged Application"
0223 1916 0620 1515	Software Options Tools	"Replacing a Specific Damaged Application"
0223 1919 2021 0606	Unknown	"Replacing Damaged NetCom (or RemoteCom or Standalone) Software and ViewPoint Common Software" and "Replacing a Specific Damaged Application" (Note: Replace ALL applications.)
0308 0904 0519 0515	VP Chinese Text Capability	"Replacing a Specific Damaged Application"
0315 1422 0518 1909	VP Object Conversion Utility	"Replacing a Specific Damaged Application"

Table A-3   Codes Beginning With 9999 and 78XX or 80XX
(Continued)

9999, 78XX or 80XX, followed by:	The application trying to start is:	Refer to the procedure titled:
0322 0119 0309 0903	VP File Conversion of ASCII Documents	"Replacing a Specific Damaged Application"
0322 0919 1922 0303	VP File Conversion of VisiCalc Spreadsheets	"Replacing a Specific Damaged Application"
0322 0919 1912 1520	VP File Conversion of Lotus 1-2-3 Spreadsheets	"Replacing a Specific Damaged Application"
0322 0409 0603 1514	VP File Conversion of Document Interchange Format	"Replacing a Specific Damaged Application"
0322 2315 1804 1920	VP File Conversion of WordStar Documents	"Replacing a Specific Damaged Application"
0322 2727 2703 1514	VP File Conversion of 860 Documents	"Replacing a Specific Damaged Application"

Table A-3 Codes Beginning With 9999 and 78XX or 80XX
(Continued)

9999, 78XX or 80XX, followed by:	The application trying to start is:	Refer to the procedure titled:
0322 2727 2718 0603	VP File Conversion of 860 Record Files	"Replacing a Specific Damaged Application"
0401 2001 0301 1620	VP Data Capture	"Replacing a Specific Damaged Application"
0415 0301 1616 1219	VP Document Editor	"Replacing a Specific Damaged Application"
0415 0302 0119 0903	VP Document Editor	"Replacing a Specific Damaged Application"
0415 0302 2120 2015	VP CUSP Buttons	"Replacing a Specific Damaged Application"
0415 0304 0120 0106	VP Document Editor	"Replacing a Specific Damaged Application"
0415 0304 0407 0615	VP Data-Driven Graphics	"Replacing a Specific Damaged Application"

Table A-3   Codes Beginning With 9999 and 78XX or 80XX (Continued)

9999, 78XX or 80XX, followed by:	The application trying to start is:	Refer to the procedure titled:
0415 0305 1714 0615	VP Equations	"Replacing a Specific Damaged Application"
0512 1516 2009 1514	VP Extended Language Option	"Replacing a Specific Damaged Application"
0619 1303 1514 0609	VP PC Emulation	"Replacing a Specific Damaged Application"
0620 0400 0000 0000	Fonted Text Display (part of VP Extended Language Option)	"Replacing a Specific Damaged Application"
0718 0116 0809 0319	VP Local Draft Printer	"Replacing a Specific Damaged Application"
0902 1327 2727 2705	VP Terminal Emulation of IBM 3270	"Replacing a Specific Damaged Application"

Table A-3   Codes Beginning With 9999 and 78XX or 80XX
(Continued)

9999, 78XX or 80XX, followed by:	The application trying to start is:	Refer to the procedure titled:
0919 1903 1514 0609	VP Spreadsheet	"Replacing a Specific Damaged Application"
1001 1601 1405 1905	VP Japanese Text Capability	"Replacing a Specific Damaged Application"
1119 1827 2705 1321	VP Terminal Emulation of TTY	"Replacing a Specific Damaged Application"
1213 0116 1612 0315	VP List Manager	"Replacing a Specific Damaged Application"
1213 0415 0321 1305	VP List Manager	"Replacing a Specific Damaged Application"
1213 0903 1514 0315	VP List Manager	"Replacing a Specific Damaged Application"

Table A-3 Codes Beginning With 9999 and 78XX or 80XX
(Continued)

9999, 78XX or 80XX, followed by:	The application trying to start is:	Refer to the procedure titled:
1213 1421 0312 0521	VP List Manager	"Replacing a Specific Damaged Application"
1213 1619 0315 1406	VP List Manager	"Replacing a Specific Damaged Application"
1213 2209 0523 0315	VP List Manager	"Replacing a Specific Damaged Application"
1213 2116 0718 0104	VP List Manager	"Replacing a Specific Damaged Application"
1301 0912 0315 1406	Mail	"Replacing a Specific Damaged Application"
1319 0415 1927 2706	VP PC Emulation	"Replacing a Specific Damaged Application"

Table A-3   Codes Beginning With 9999 and 78XX or 80XX
(Continued)

9999, 78XX or 80XX, followed by:	The application trying to start is:	Refer to the procedure titled:
1603 0513 2112 0120	VP PC Emulation	"Replacing a Specific Damaged Application"
1805 1315 2005 1618	Remote Printing	"Replacing a Specific Damaged Application"
1916 0512 1209 1407	VP Spelling Checker	"Replacing a Specific Damaged Application"
2020 2505 1321 1201	Remote System Administration	"Replacing a Specific Damaged Application"
2119 0518 0409 0320	VP Extended Language Option	"Replacing a Specific Damaged Application"
2206 1215 1616 2503	VP PC Emulation	"Replacing a Specific Damaged Application"
2220 2727 2705 1321	VP Terminal Emulation of DEC VT100	"Replacing a Specific Damaged Application"

Replacing Damaged ViewPoint Basic Workstation Software

If the workstation fails to start and the cursor codes 9999, 76XX appear, reinstall the basic part of ViewPoint software.

1. Boot the installer and access the recovery scripts.

2. Type the number corresponding to the *"Make Room to Install ViewPoint Basic Workstation on 8010/6085 Workstation"* option, and press <Return>.

3. Reboot and access the recovery scripts when the workstation displays **[7604]**.

4. Type the number corresponding to the *"Install ViewPoint Basic Workstation on 8010/6085 Workstation"* option, and press <Return>.

NOTE: If the workstation is an Extended Language workstation, the following additional steps must be performed before reinstalling the Extended Language software:

5. Boot the installer and access the recovery scripts.

6. Type the number corresponding to the *"Make Room to Install ViewPoint Extended Language Software on 8010/6085 Workstation"* option, and press <Return>.

7. Reinstall the Extended Language software when the workstation displays **[7604]**.

Replacing Damaged NetCom (or RemoteCom or Standalone) Software and ViewPoint Common Software

If the workstation fails to start and the cursor codes 9999, 77XX appear, reinstall VP NetCom (or VP RemoteCom or VP Standalone) software.

1. Boot the installer and access the recovery scripts.

2. Type the number corresponding to the *"Make Room to Install Common Software on 8010/6085 Workstation"* option, and press <Return>.

3. Reboot and access the recovery scripts when the workstation displays **[7604]**.

4. Type the number corresponding to the desired option (the options are listed below) and then press <Return>:

   - *"Install VP NetCom Common Software and ViewPoint Common Software on 8010/6085 Workstation"*

   - *"Install VP RemoteCom Common Software and ViewPoint Common Software on 8010/6085 Workstation"*

   - *"Install VP Standalone Common Software and ViewPoint Common Software on 8010/6085 Workstation"*

The workstation should now start successfully.

NOTE: If the workstation is an Extended Language workstation, the following

additional steps must be performed before reinstalling the Extended Language software:

5. Boot the installer and access the recovery scripts.

6. Type the number corresponding to the *"Make Room to Install ViewPoint Extended Language Software on 8010/6085 Workstation"* option, and press < Return >.

7. Reinstall the Extended Language software when the workstation displays **[7604]**.

Replacing a Specific Damaged Application

If the workstation fails to start and the cursor codes 9999, 78XX or 80XX appear, reinstall the application identified in Table A-3.

To reinstall a damaged auto-run application:

1. Boot the installer and access the recovery scripts.

2. Type the number corresponding to the *"Start 8010/6085 System with Auto-Run Temporarily Disabled on All Applications"* option, and press <Return>.

3. Open the Loader Icon when the workstation boots.

4. Delete the damaged application from the Loader Icon.

5. Reinstall the application (either from floppy disk or from the network).

NOTE: Refer to the sub-tab titled "Application Loader" in the VP Series Reference Library for information about installing, loading, and deleting applications.

6. Set the Auto-Run option on the application to [YES], if desired.

Notes:

Introduction

Artificial Intelligence has begun marketing a new workstation, the 1186 AIS (Artificial Intelligence System), based on the 6085 Professional Computer System.

Except for the differences described in this appendix, the 1186 AIS diagnostic tests are identical to the 6085 diagnostics tests. Tests that run identical to the 6085 diagnostic tests (such as the Echo Test and the RS232C tests) are not included in this appendix. Refer to the appropriate chapters of this handbook for complete descriptions of these tests.

1186 AIS Off-Line Diagnostics

Although running 1186 AIS Off-Line Diagnostics (from floppy disk or from the network) is identical to running 6085 Off-Line Diagnostics, the Keyboard Test does not check the middle mouse button (the AI Mouse has three buttons, which is necessary for the customer's applications). 1186 AIS Off-Line Diagnostics will be updated to include checking this mouse button in the near future. The function of the three buttons can be tested using the On-line Keyboard test.

1186 AIS On-Line Diagnostics

Running 1186 AIS On-Line Diagnostics checks the identical information as on the 6085, but is accessed differently and also has a different appearance.

Unlike 6085 On-Line Diagnostics, the 1186 AIS On-line Diagnostics can only be entered from the bouncing square (Figure B-1). Enter On-Line Diagnostics by pressing the right mouse button when the bouncing square is displayed.

```
                  Monday
            10-Mar-86  9:03:16 PDT
         *****XEROX INTERLISP-D*****
         Click Left button for System Tool
          Both buttons for Profile Tool
      Right button for Online Diagnostics Tool
         Stop key for selected Lisp volume
    Press Space Bar for Online Diagnostics Tool
```

Figure B-1   1186 AIS Bouncing Square

Any of the tests on the On-Line Diagnostics
Menu may be selected by pointing to the test
with the cursor and pressing the left mouse
button.
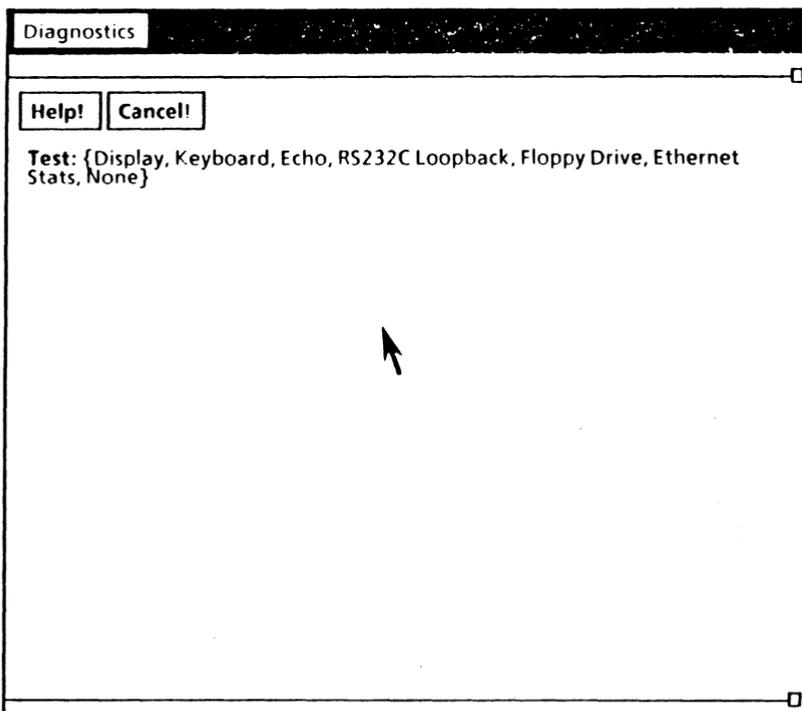
Figure B-2 1186 AIS Diagnostics Window

The desired test is highlighted and [Start!]
appears. Run the test by moving the cursor to
[Start!] and pressing the left mouse button.
The test functions the same as on the 6085.

Diagnostics

| Help! | Start!! | Cancel! |

Test: {Display, Keyboard, Echo, RS232C Loopback, Floppy Drive, Ethernet
Stats, None}
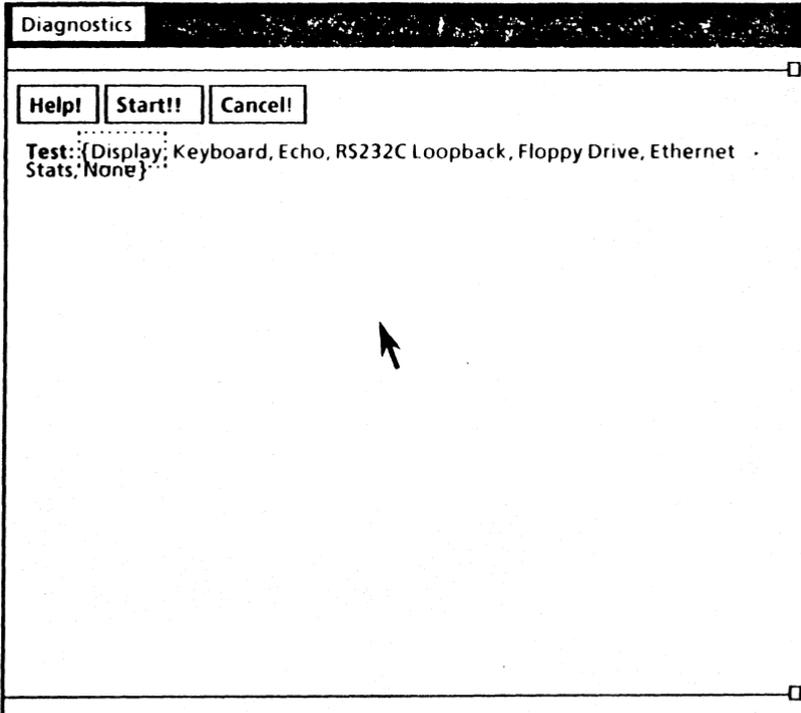
Figure B-3 1186 AIS Selecting a Test

Keyboard Test

Selecting Keyboard Test and [Start!] from the On-Line Diagnostics menu brings up the Keyboard Test window.

Pressing the right mouse button produces a black square in corresponding position on the represented mouse. Pressing the left mouse button produces a black square in corresponding position on the represented mouse. Pressing the middle mouse button inverts the entire mouse from white to black. If the middle mouse button is pressed in combination with either or both of the other mouse buttons, the mouse is inverted and the middle mouse button is white.

Floppy Drive

When Floppy Drive is selected, six types of floppy tests are displayed (see Figure B-4).

Diagnostics

Help!	Start!!	Cancel!

Test: {Display, Keyboard, Echo, RS232C Loopback, Floppy Drive, Ethernet Stats, None}

Type of Test: {Clean Heads, Standard, Summary, Format, Exerciser, Command File}
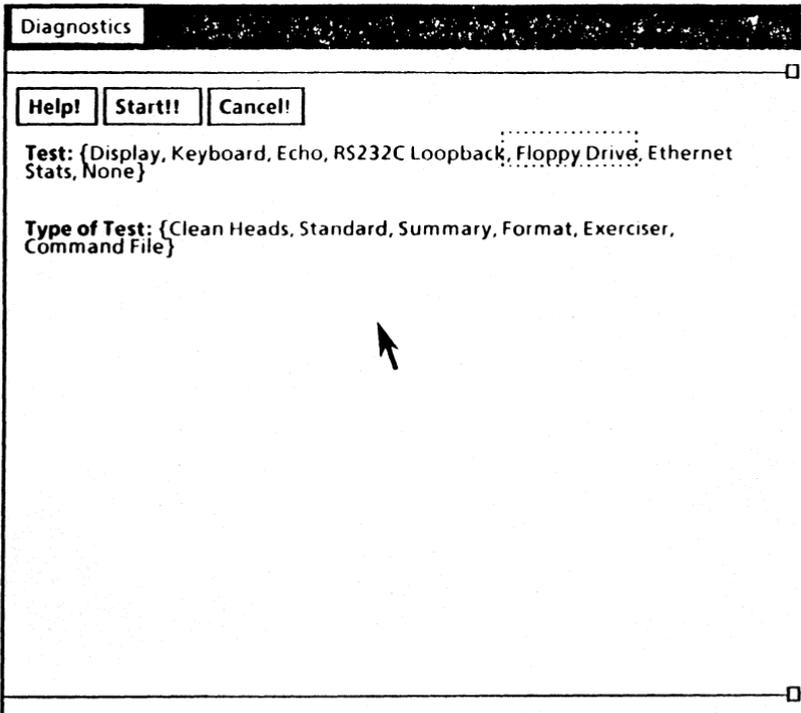
Figure B-4   1186 AIS Floppy Drive Window

Clean Heads

Insert the head cleaning disk into the floppy drive and allow the routine to run. After approximately 2½ minutes, the routine automatically stops.

```
┌──────────────────────────────────────────────────────────────┐
│ Diagnostics                                                    │
├──────────────────────────────────────────────────────────────┤
│ ┌─────────┐                                                    │
│ │ Confirm! │                                                  □│
│ └─────────┘                                                    │
│ ┌───────┐ ┌────────┐ ┌─────────┐                              │
│ │ Help! │ │ Start!! │ │ Cancel! │                             │
│ └───────┘ └────────┘ └─────────┘                              │
│ Test: {Display, Keyboard, Echo, RS232C Loopback, Floppy Drive,│
│        Ethernet Stats, None}                                   │
│                                                                │
│ Type of Test: {Clean Heads, Standard, Summary, Format,         │
│                Exerciser, Command File}                        │
│                                                                │
│                              ▶                                 │
│                                                               □│
├──────────────────────────────────────────────────────────────┤
│ Please insert a head-cleaning diskette.                        │
│                                                                │
│ Please select Confirm! when this is done.  Head cleaning in   │
│ progress                                                       │
│ Head cleaning completed                                        │
│ Please remove head cleaning diskette from the unit.            │
│                                                                │
└──────────────────────────────────────────────────────────────┘
```

Figure B-5 1186 AIS Clean Heads Window

Standard Floppy Disk Test

Insert *Diagnostic Floppy Disk #2* into the floppy disk drive. The Standard Floppy Disk Test displays the message in Figure B-6 if the test completes successfully.

Diagnostics

Help! Start! Cancel!

Test: {Display, Keyboard, Echo, RS232C Loopback, Floppy Drive, Ethernet Stats, None

Type of Test: {Clean Heads, Standard, Summary, Format, Exerciser, Command File}

Please insert the diagnostics floppy disk. (2)
Note: Any other diskette will cause erroneous results

Please select Confirm! when this is done. This is double-sided diskette.
Is the diskette the diagnostic floppy disk?

Please select either Yes! or No! as appropriate.

No floppy errors.
Floppy diagnostic finished.

Figure B-6 1186 AIS Standard Floppy Disk Test

Summary

Summary can be selected after the completion of either the Standard Floppy Disk Test or Exerciser Test for detailed test results.

```
┌─────────────────────────────────────────────────────────────────────────┐
│ Diagnostics                                                               │
└─────────────────────────────────────────────────────────────────────────┘

┌──────┐ ┌──────┐ ┌─────────┐
│ Help! │ │ Start! │ │ Cancel! │
└──────┘ └──────┘ └─────────┘
  Test: {Display, Keyboard, Echo, RS232C Loopback, Floppy Drive,  Ethernet Stats,
         None

  Type of Test: {Clean Heads  Standard,  Summary,  Format, Exerciser, Command File}


                        ↖
```

Floppy diagnostic finished. SUMMARY ERROR LOG

	Read	Seek	Read	Write	Write
TIMES EXECUTED	0	0	16	0	0
Good Completion	0	0	16	0	0
Disk Changed	0	0	0	0	0
Not Ready	0	0	0	0	0
Seek Error	0	0	0	0	0
Deleted Sector	0	0	0	0	0
Record Not Found	0	0	0	0	0
Header Error	0	0	0	0	0
Data Error	0	0	0	0	0
Data Lost	0	0	0	0	0
Write Protected	0	0	0	0	0
Other Error	0	0	0	0	0

Floppy diagnostic finished.

**Figure B-7   1186 AIS Summary Error Log
for Standard Floppy Disk**

Format

This utility is used to format a diskette for diagnostic purposes. To format a disk for ViewPoint, use "Format" in the Floppy Drive Icon property sheet.

Exerciser

This test checks the mechanical functions of the disk drive, as well as the read and write functions. Be sure to use a scratch diskette for this test. After completion of the Exerciser test, the results should be similar to Figure B-8.

```
┌──────────────────────────────────────────────────────────────────┐
│ Diagnostics                                                        │
├────────────────────────────────────────────────────────────────┐ ─┤
│ ┌──────┐ ┌───────┐ ┌─────────┐                                 □  │
│ │ Help!│ │ Start!│ │ Cancel! │                                    │
│ └──────┘ └───────┘ └─────────┘  .....................             │
│  Test: {Display, Keyboard, Echo, RS232C Loopback, Floppy Drive, : Ethernet Stats, │
│        None                     :...................:             │
│                                  ................                 │
│  Type of Test: {Clean Heads Standard, : Summary, : Format, Exerciser, Command File} │
│                                 :...............:                 │
│                                                                   │
│                          ▲                                        │
│                          ↖                                        │
│                                                                   │
│                                                                   │
└────────────────────────────────────────────────────────────────┐ ─┤
                                                                  □
```

```
Floppy diagnostic finished.  SUMMARY ERROR LOG
                      Read      Seek      Read      Write     Write
TIMES EXECUTED        5         25        93        69        23
   Good Completion    5         25        93        68        23
   Disk Changed       0         0         0         0         0
   Not Ready          0         0         0         0         0
   Seek Error         0         0         0         0         0
   Deleted Sector     0         0         0         0         0
   Record Not Found   0         0         0         0         0
   Header Error       0         0         0         0         0
   Data Error         0         0         0         0         0
   Data Lost          0         0         0         0         0
   Write Protected    0         0         0         0         0
   Other Error        0         0         0         0         0
Floppy diagnostic finished.
```

Figure B-8 1186 AIS Summary Error Log for Exerciser Test

Command File

This test is used by Technical Support and Field Engineering.

Ethernet Stats

This test is used by Technical Support and Field Engineering.

Bilevel	An image output of the scanner which contain only black and white pixels without displaying shades of gray.
Bit	An abbreviation of "Binary Digit," the smallest unit of information recognized by a computer and is represented by binary numbers of 1 (one) or 0 (zero).
Byte	A byte is a set of eight contiguous bits, which represent a character, symbol, or operation.
Calibration	A scanner operation that sets the lamp intensity and allows scanner initialization and registration during the power on sequence.
Choice Parameter	See "Properties."
Compression	A technique for reducing the amount of storage required for a given collection of stored data.
∎**Confidence Test**	This is a collection of tests that performs a thorough, non-destructive verification of the rigid disk drive. It detects, isolates, and reports hard disk errors and excessive soft errors in the rigid disk drive and/or the rigid disk controller on the IOP PWB. ∎
Cropping	An action of the scanner which selects a specific image area within a document to be scanned. The data surrounding the desired image area is removed or ignored.
DCM	An acronym for Display Control and Memory. The DCM PWB resides in slot C1 of the processor.
Default	The predetermined values and parameters which are present when the software is first loaded.
Enhancement	A scanner option which highlights lines and characters, permitting faint images to be visible.

Grayscale

An image output of the scanner which displays the varying shades of gray for each pixel instead of interpreting them as black or white. (The contrasting image output type is Bilevel.)

Halftone

A halftone image is a "screened" image. Illustrations in newspapers and magazines are created with a screen effect.

Histogram

The relative frequency distribution of the document image reflectance data, formed during prescan, if the Filter/Histogram PWB is installed.

IOP

An acronym for Input/Output Processor. The IOP PWB resides in slot C4 of the processor.

LIC

An acronym for Lamp Intensity Control. LIC is a circuitry that automatically adjusts the lamp intensity and controls it during scanning.

LSI

An acronym for Large Scale Integrated Circuit. This term is used in the Off-Line Diagnostics Interface Test.

MEB

An acronym for Memory Expansion Board. The optional MEB PWB resides in slot C2 of the Processor.

MPB

An acronym for Mesa Processor Board. The MPB PWB resides in slot C3 of the Processor.

Moire Pattern

An image defect resulting from two overlapping "screens."

❚New Disk Checkout

This is a collection of tests that performs a thorough and destructive verification of the rigid disk drive. New Disk Checkout is used to detect hard errors and excessive soft errors. It is to be used only with the assistance of the Technical Support Center or a Region Engineer.❚

Off-Line	This term refers to an activity or piece of equipment which is not directly connected to a computer. It also refers to diagnostic routines that do not reside on the system.
On-Line	This term refers to an activity or piece of equipment which is directly connected to or interacting with a computer. It also refers to diagnostic routines that reside on the system.
Opie	The operating system for the software which runs on the IOP.
Password	This is a required code, in addition to the user's name, that allows the user to log on to the computer. A password is required for using the diagnostic routines at the System Administrator and Technical Support levels.
Pixel	An abbreviation for Picture Element. A small square represents a pixel. An image can be thought of as a grid of many small squares, called pixels. The number of pixels per square area is the resolution. Therefore, the higher the resolution the better the representation of the image.
PCO	An acronym for Personal Computer Option The optional PCO PWB resides in slot C5 of the Processor.
▌PCX	An acronym for Personal Computer eXtension. The optional PCX PWB resides in slot C5 of the Processor and provides the connection to the Companion 386 console. ▌
PPI	A measurement of the amount of pixels per inch.
Prescan	The movement of the carriage, prior to the document scan, during which the histogram image data is captured.

Properties

Properties fall into two major categories: (1) fixed information about the object, and (2) user-modifiable information. The former are called "information-only" properties, and the latter "modifiable" properties.

Information-only properties are displayed without a surrounding rectangle. The information is displayed for information purposes only, and cannot be modified by the user.

There are three types of parameters that make up modifiable properties:

Text Parameters - Text parameters may only contain alphanumeric characters. The parameter name is followed by a rectangular outlined area in which the user enters textual information.

NOTE: Some text parameters only accept numeric values. For example, the "Number of Copies" option on the printing option sheet is a text parameter used to specify the number of copies to print.

Choice Parameters - A choice parameter has a number of possible values, where each value is mutually exclusive. Only one value may be in effect at any one time.

Choice parameters appear in two forms.

- In one form the parameter name is followed by the available choices in connected rectangles, one choice per rectangle. Each choice, or property, consists of one or more words or a graphic symbol. All possible choices are displayed on the property sheet, where the single choice/property of interest is selected with the mouse. The choices/properties in effect are displayed in reverse video.

There are three types of parameters that make up modifiable properties:

Text Parameters - Text parameters may only contain alphanumeric characters. The parameter name is followed by a rectangular outlined area in which the user enters textual information.

NOTE: Some text parameters only accept numeric values. For example, the "Number of Copies" option on the printing option sheet is a text parameter used to specify the number of copies to print.

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Choice parameters appear in two forms.

- In one form the parameter name is followed by the available choices in connected rectangles, one choice per rectangle. Each choice, or property, consists of one or more words or a graphic symbol. All possible choices are displayed on the property sheet, where the single choice/property of interest is selected with the mouse. The choices/properties in effect are displayed in reverse video.

- In the second form, the available choices are displayed in an auxiliary menu similar to the desktop auxiliary menu. Choices/properties are selected by holding the left mouse button down over the auxiliary menu symbol, then, while

holding the mouse button down, moving the pointer over the choice/property of interest and releasing the mouse button.

State Parameters - A state parameter may be either on or off. A state parameter is displayed as one or more words or a graphic symbol in a rectangle. If several state parameters are related, they are shown on the same line, with a space between them. State parameters are invoked by selecting the parameter with the mouse. If a state parameter is on, it is displayed in reverse video.

Reflectance

Reflectance is the percentage of the light reflected by the document. A typical white paper reflects about 80% of the light, while a typical black paper reflects about 5%.

Resolution

The number of pixels per square area.

Rigid Disk Drive

This is the primary storage device in the 6085 Processor.

Root Page

The physical volume divides the rigid disk into a number of fixed-sized subareas known as Pilot Logical Volumes, which associates a name with the disk and provides locations for storing pointers to files required to boot from the disk. The first page of each logical volume is the Root Page. (The physical volume is created by the Installation Utility as part of the "Partition" operation.)

▌RRD

This is an acronym for Removable Rigid Drive. The RRD is the primary storage device of the 6085 Tempest and 6085 Commercial Widebody Systems. ▌

RS232C

This is the industry standard, adopted by the Electronic Industries Association, to insure uniformity of interface between data communication equipment and data processing terminal equipment.

Scaling

A scanner operation which provides the ability to reduce or enlarge an image.

Scratch Diskette

This is a disk whose contents are unimportant and can be written over. For example, you would use a scratch diskette in the Off-Line Diagnostics, execute an exerciser test of the floppy system.

Screening

During the production of newspapers, magazines and books, each image is set on a plate ruled with a matrix of lines, crossing lines or dots. When that image is scanned, the original matrix and the copied matrix may appear as overlapping lines, which is called a moire pattern. A portion of the filter function is used to eliminate the overlapping lines (screens).

▌SDD Page

SDD is an acronym for Self Describing Disk. The SDD page is located on Page 14 of Cylinder 0. The rigid disk drive type and parameters are written on this page. ▌

SPI

An acronym for Spots Per Inch. It is a measurement of the number of pixels in one square inch area.

Text Parameter

See "Properties."

Thresholding   Defines a gray level below which the bilevel output image is black, and above which the output is white. The 7650 Pro Imager can define 0 to 255 levels of Threshold.

TTY   An acronym for Teletype. TTY is a teleprinter terminal made by the Teletype Corporation.

Window   A rectangular region of the display in which text and graphics is displayed.

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Name	Job Title	Employee No.

Mailing Address

Page/Fig.No.	Description of Error or Improvement

To receive an answer, mark this area. Include name and mailing address above.

‖ ‖‖

BUSINESS REPLY MAIL

FIRST CLASS   Permit No. 229   El Segundo, California

POSTAGE WILL BE PAID BY ADDRESSEE

XEROX CORPORATION
DSBU/OS Service Education
701 S. Aviation Blvd. N2-19
El Segundo, California 90245

Attn: Service Education Manager