PRELIMINARY

AViiON SYSTEM DIAGNOSTICS

FIELD GUIDE

043-000075

SCM > Xdiag
default mode - password

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SECTION 1

INTRODUCTION

This section describes the major features and documentation related to the AViiON System Diagnostics Model B020AZN-A (DGC Part Number 079-000100).

1.1 PRODUCT OVERVIEW

The AViiON System Diagnostics are a menu driven diagnostics and toolset system that allows you to test and/or verify the integrity of Reduced Instruction Set Computing (RISC) based systems. The Diagnostics fully test and help isolate failing Field Replaceable Units (FRUs) in the system. The AViiON System Diagnostics are loaded after power-up tests and executable diagnostics are run on the system.

The AViiON System Diagnostics consist of five Main Menu selections:

1. Acceptance Test - This selection is for use mainly by the customer but can also be used by the Field Engineer (FE). This 15 minute test verifies proper operation of a system at the time of installation or of a FRU that has been replaced. This tests all devices found in the system and displays status reports every minute. Section 3 of this Guide has Acceptance Test information.

2. System Exerciser - This selection is for use by the FE. This test also verifies proper operation of a system at installation or of a replaced FRU but can be run for any length of time. In addition, this selection allows the FE to customize the tests to be run. If a failing FRU is found, an error report is displayed. Otherwise, a general status report is displayed when you terminate the system exerciser test. Section 4 of this Guide has System Exerciser information.

3. Tools - This selection is for use by the customer and the FE. Tools allows you to perform maintenance functions on disk and tape media. Tools also allows you to run a network connection test. If you have an AViiON 300 series station, you can run graphics tests, a keyboard test or a mouse test. Section 5 of this Guide has Tools information.

4. Help - This selection gives a brief description of the main menu selections.

5. Exit to SCM - This selection allows you to exit from the AViiON System Diagnostics and return to the SCM prompt.

Figure 1-1 is a flow representation of the AViiON System Diagnostics:

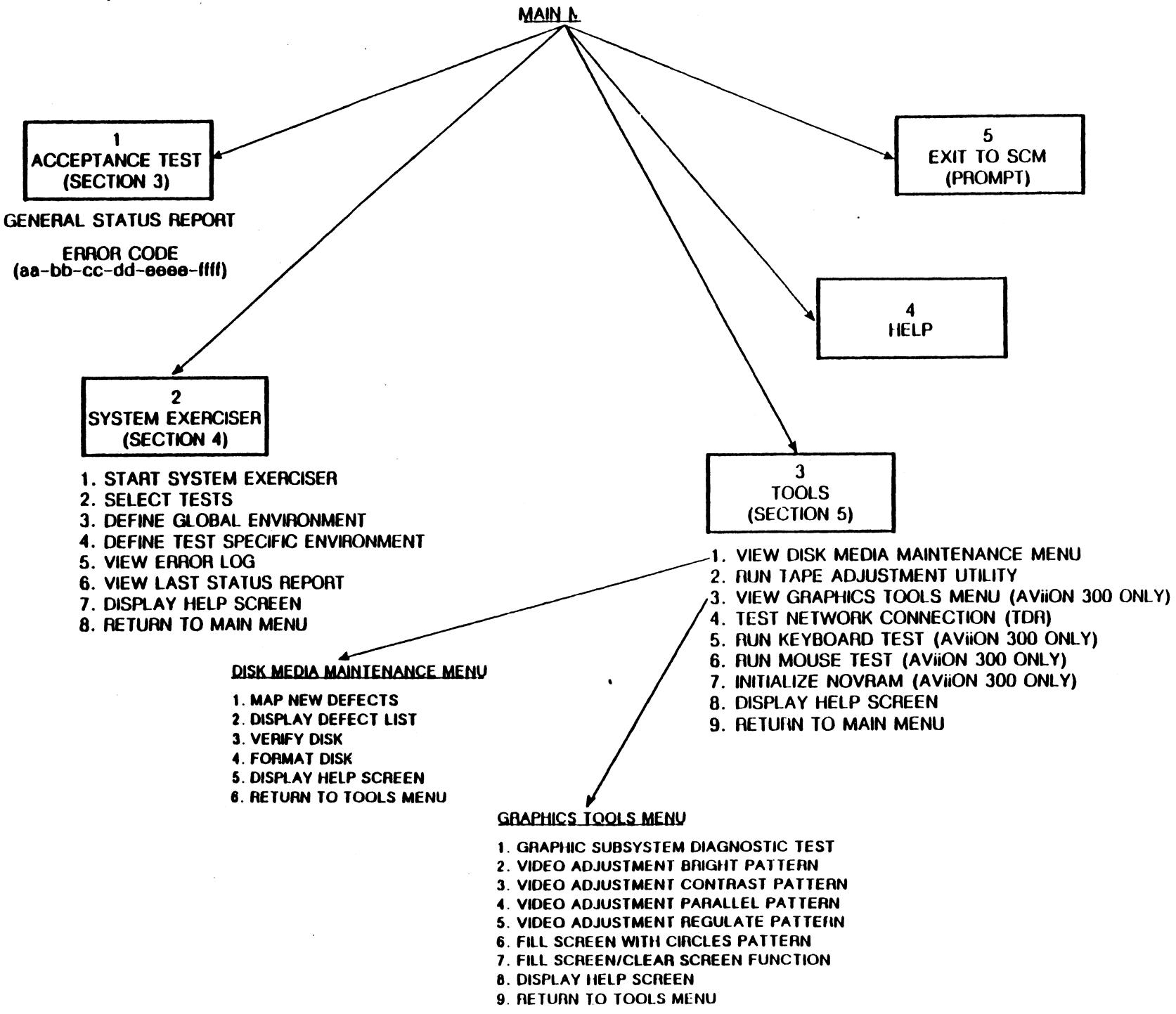


Figure 1-1. AViiON System Diagnostics Menu Structure

043-000075

1.2 RELEASE NOTICE

If you have not already done so, read the AViiON System Diagnostics Release Notice (DGC Part Number 085-001090) distributed with the media before continuing with this Guide. In case of conflict of information, the release notice takes precedence over this Guide.

1.3 RELATED DOCUMENTATION

Table 1-1 lists the documentation associated with the AViiON System Diagnostics.

Table 1-1. Related Documentation

DOCUMENT NAME	DGC PART NUMBER
Installation, Repair and Maintenance Manual AViiON AV5100/AV5120 Computer Systems Models 70032, 70033, 70035, 70036	043-003722
Install, Repair and Maintenance Manual AViiON 300 Series Workstations Models 70000-70030	043-003723
Using the AViiON System Control Monitor	014-001802

SECTION 2

INSTALLATION AND RESTART MENU

This section describes the system requirements and procedures necessary to install the AViiON System Diagnostics on the system. The Diagnostics may already be installed on your disk drive. If not, they can be installed using a cartridge tape or they can be installed via a Local Area Network (LAN). This section also describes how to enter the Restart Menu and the selections available for use in the Restart Menu.

2.1 SYSTEM REQUIREMENTS

This section describes the devices required to install and run the AViiON System Diagnostics.

Media Devices - One AViiON System Diagnostics cartridge tape (DGC Part Number 079-000100) is required if you do not have the AViiON System Diagnostics loaded on your disk drive.

Hardware Devices - There is no specific minimum hardware configuration but you must have the ability to load the AViiON System Diagnostics by cartridge tape or over a LAN if they are not already on a disk drive.

2.2 INSTALLATION

Complete this section to install the AViiON System Diagnostics.

1. Insert the AViiON system diagnostics cartridge tape (DGC Part Number 079-000100) in the cartridge tape drive. Be sure to push the drive latch far to the right to engage the read/write heads. The tape drive is now on-line.

2. Turn on power to the tape drive, to your station's monitor, and to all other connected peripherals. Be sure all devices are on-line.

3. Power on the computer and wait for the System Control Monitor (SCM) prompt.

4. Boot the AViiON System Diagnostics.
To boot the diagnostics from the SCSI tape, in lower case letters, type

```
SCM>b st(0,4)
```

To boot the diagnostics from disk, in lower case letters, type

```
SCM>b usr:/stand/diags
```

If you are booting from disk and you have a tape drive in your system configuration, make sure you have scratch media in your tape drive. If you do not have a tape in the drive, the tape drive will not be recognized as part of the system during initialization.

The system returns the boot path

```
cied(ffffee00,0)usr:/stand/diags    (for AViiON 5000) or
sd(insc( ),0)usr:/stand/diags       (for AViiON 300).
```

5. Press New Line and the system displays a copyright legend. Press New Line again to start initializing the system using the AViiON System Diagnostics. The list of devices that appears on your screen is dependent upon your system and system configuration. Figure 2-1 shows a sample AViiON 300 series station initializing screen; Figure 2-2 shows a sample AViiON 5000 series system initializing screen.

```
AViiON System Diagnostics
Version 00.00  mm/dd/yy

Initializing Operating System for AViiON 300 Series Station

        8192 KBytes system memory
        6925 KBytes memory available for test
        Motorola 88100 CPU Rev x
        Motorola 88200 CMMU Rev x (Instruction Cache)
        Motorola 88200 CMMU Rev x (Data Cache)
        Initializing Real Time Clock
        Initializing SCSI Controller
        Initializing Parallel Printer
        Initializing Serial Port
        Initializing LAN Controller
```

Figure 2-1. Initializing the System (AViiON 300 Series Station)

```
AViiON System Diagnostics
Version 00.00   mm/dd/yy

Initializing Operating System for AViiON 5000 Series System

Sizing Controllers on VME Bus:

Checking for ESDI Controllers at addresses:
         ffffef00 (hex)      Found
         fffff100 (hex)      Not found
Checking for SCSI Controllers at addresses:
         fffff300 (hex)      Found
         fffff500 (hex)      Not found
Checking for LAN Controllers at addresses:
         55900000 (hex)      Found
         55980000 (hex)      Not found
Checking for Synchronous I/O Controllers at addresses:
         55b00000 (hex)      Found
         55b10000 (hex)      Not found
Checking for Asynchronous I/O Controllers at addresses:
         60000000 (hex)      Found
         60020000 (hex)      Not found
         60040000 (hex)      Not found
         60060000 (hex)      Not found

Press New Line to Proceed

         16384 KBytes system memory
         15109 KBytes memory available for test
         Motorola 88100 CPU Rev x
         Motorola 88200 CMMU Rev x (Instruction Cache)
         Motorola 88200 CMMU Rev x (Data Cache)
         Initializing Virtual Console
         Initializing Real Time Clock
         Initializing Async I/O Controller 0
         Initializing SCSI Controller 0
         Initializing ESDI/SMD Controller 0
         Initializing Parallel Printer
         Initializing Serial Port
         Initializing LAN Controller 0
```

Figure 2-2. Initializing the System (AViiON 5000 Series System)

6. After the system is initialized, the system prompts you with the entries similar to the list in Figure 2-3. Complete each entry and press New Line.

```
Run with instruction caches on (y/n) [y]?
Enable Parity Checking for instructions (y/n) [y]?
Run with data caches on (y/n) [y]?
Enable Parity Checking for data (y/n) [y]?
```

Figure 2-3. Parity Checking/Cache Entries

7. To gain access to the FE mode of the Diagnostics (including the System Exerciser tests), when the entry

   "Current time is hh:mm day,month dd,19yy. Is this correct (y/n) [y]?"

   appears on the screen, press Ctrl-P. The screen displays

   "Enter password:". DGREMOTEFE

   Enter the current acceptable password and press New Line. The "Current time is hh:mm day,month dd,19yy. Is this correct (y/n) [y]?" entry appears on the screen again. Answer yes or no and press New Line to continue.

8. Next the system sizes all peripherals connected to the system. Check to make sure peripheral sizing information is accurate. If not, check to make sure all device jumpering is correct (refer to the appropriate documentation listed in Section 1.3 of this Guide). Restart the diagnostics.

   If the message "Drive Not Ready" appears on the screen, check to make sure there is scratch media in the tape drive and that the drive latch is pushed far to the right making the drive on-line.

   When the peripheral sizing list matches your system configuration, press New Line to continue.

```
Sizing peripherals ...

        SCSI Controller:

           UNIT 0:  MICROP 1578-15 UPDG02 Disk Drive found
           UNIT 1:  ARCHIVE VIPER 150 21247-005 Tape drive found

        Press New Line to Proceed
```

Figure 2-4. Sizing the Peripherals

NOTE

Press the ESC key at any time to exit a menu.

9. The AViiON System Diagnostics Main Menu (Figure 2-5) is displayed:

NOTE

If the System Exerciser selection is not listed on the Main Menu, you are not in the FE mode of the AViiON System Diagnostics. If you are not in the FE mode of the diagnostics, you may need to reenter the correct password. Return to step 4 to reboot the tape and complete the installation procedure again.

```
+-------------------------------------+
      AViiON System Diagnostics
      Revision:  00.00

      Data General Corporation
      Proprietary Use Only

              Main Menu

      1.  Run acceptance test
      2.  View system exerciser menu
      3.  View tools menu
      4.  Display help screen
      5.  Exit to SCM

      Enter choice [1]:
+-------------------------------------+
```

FE MODE

Figure 2-5. Main Menu

2.3 RESTART MENU

If you are in the FE mode of operation, you can access the Restart Menu any time after booting the AViiON System Diagnostics. Refer to Section 2.2 step 7 to gain access to the FE mode of operation. Do not enter the Restart Menu while running the System Exerciser test or when running individual Graphics, Mouse or Keyboard tests; a number of interrupt errors may result.

1. If you have an AViiON 300 series station, press the CTRL-ALT-DEL keys.
   If you have an AViiON 5000 series system, press the CMD-BRK keys.

2. The Restart Menu (Figure 2-6) is displayed.

```
+-------------------------------------------------------------+
    C - Continue                        P - Process Table Dump
    D - Go to PROM Debugger             S - Semaphore Queue Dump
    B - Restart Operating System        X - Stack Traceback
    E - Toggle Print Messages           L - Display Error Log


                  Which Action ?

+-------------------------------------------------------------+
```

Figure 2-6. Restart Menu

The following briefly describes the Restart Menu entries.

Continue - Select C to return to the activity being performed before you entered the Restart Menu.

Go to PROM Debugger - Select D to return to the SCM prompt to access activities such as XDIAG or Environment Control Word.

Restart Operating System - Select B to return to the system initialization (Figures 2-1 and 2-2).

Toggle Print Messages - Select E to get printouts of the Restart Menu and SCM prompt activities.

Process Table Dump - Selection P is for developmental purposes.

Semaphore Queue Dump - Selection S is for developmental purposes.

Stack Traceback - Selection X is for developmental purposes.

Display Report Log - Select L to get the first ten error reports and the last Status Report found when running AViiON System Diagnostics. Refer to Section 5.X for more error log information.

SECTION 3

MENU STRUCTURE - ACCEPTANCE TEST

This section describes the Acceptance Test selection in the AViiON System Diagnostics. The Acceptance Test is mainly for customer use but can also be used by the FE. Use this test to verify proper operation of the system after installation or to verify proper operation of a FRU replacement. This tests all devices found in the system and displays general status reports every minute. Only the cartridge tape test is destructive.

Select 1 on the Main Menu (Figure 3-1) to start the Acceptance Test.

```
+-----------------------------------------+
        AViiON System Diagnostics
        Revision:  00.00

        Data General Corporation
        Proprietary Use Only

                Main Menu

        1.  Run acceptance test
        2.  View system exerciser menu
        3.  View tools menu
        4.  Display help screen
        5.  Exit to SCM


        Enter Choice: 1

+-----------------------------------------+
```

Figure 3-1. Main Menu

Figure 3-2 shows a sample acceptance test screen for an AViiON 300 series station; Figure 3-3 shows a sample for an AViiON 5000 series system. The list of devices will depend on your system and system configuration.

CAUTION

Be sure to insert a SCRATCH cartridge tape in the tape drive before running the acceptance test. The tape test will destroy any existing information on the tape.

```
The Acceptance Test verifies that the following system components are
functioning:

        Memory
        CPU
        Mouse Interface
        Clock
        LAN Controller
        Parallel Printer
        MICROP 1578-15 Disk (Unit:  0)
        ARCHIVE VIPER 150 Tape (Unit:  4)

This test runs for 15 minutes.

Press NEW LINE to Start Acceptance Test - Press Q to Quit

   Parallel printer not found.  TEST WILL BE DESELECTED.

   CAUTION :  Tape tests destroy all data on the tape.
   Please insert write-enabled scratch tapes for all tape units to be
   tested.
   Press NEW LINE when ready to proceed.

   Media in unit 4 is write protected.
   Please insert write-enabled scratch tape or press New Line to cancel
   tape test and proceed.

   Press New Line to proceed.
```

Figure 3-2. Acceptance Test (AViiON 300 Series Station)

```
+-------------------------------------------------------------------------+
  The Acceptance Test verifies that the following system components are
  functioning:

     Memory
     CPU
     DUART Channel B
     Clock
     LAN Controller 0
     Parallel Printer
     322MB ESDI Disk (Unit: 0)
     322MB ESDI Disk (Unit: 1)
     MICROP 1370 Disk (Unit: 4)
     ARCHIVE VIPER 150 Tape (Unit: 6)
     16-line Async Controller 0

  This test runs for 15 minutes.

  Press New Line to Start Acceptance Test - Press Q to Quit

     CAUTION :  Tape tests destroy all data on the tape.
     Please insert write-enabled scratch tapes for all tape units to be
     tested.
     Press New Line when ready to proceed.

     Media in unit 4 is write protected.
     Please insert write-enabled scratch tape or press New Line to cancel
     tape test and proceed.

     Press New Line to proceed.
+-------------------------------------------------------------------------+
```

Figure 3-3. Acceptance Test (AViiON 5000 Series System)

The acceptance test runs for 15 minutes. After every minute, a General Status Report similar to the one in Figure 3-4 appears on the screen. The error and pass counts entries are updated for each report. The screen subsystem descriptions are dependent on the system configuration. Use Ctrl-D at any time to stop the acceptance test and receive a final general status report before returning to the Main Menu.

General Status Report

Revision: 00.00 Total Hard Errors: 0000
Elapsed Time: 00:00:00 Current Time: 00:00:00

TEST ID	SUBSYSTEM DESCRIPTION	PASS COUNT	SOFT ERRORS	HARD ERRORS	KBYTES READ	KBYTES WRITTEN
43	Memory	1662	0	0	4073	4073
42	CPU	2398	0	0	0	0
41	DUART Channel B	56	0	0	13	13
40	Clock	0	0	0	0	0
39	LAN Controller 0	1265	0	0	24	24
38	ESDI Controller 0	240	0	0	5172	0
36	16-line Async Controller 0	3	0	3	0	0

S - Update General Status Report Ctrl-D to Stop all Tests

Figure 3-4. General Status Report

After 15 minutes, the test is complete. If the Acceptance Test passed, the General Status Report Total Hard Errors entry lists 0000 errors and asterisks (*) replace all numbers previously listed in the Test ID column.

If there is a hard failure at any time during the Acceptance Test, an error message in the following form appears on the screen:

aa-bb-cc-dd-eeee-ffff

where aa = processor type
bb = FRU code
cc = test type
dd = controller
eeee = target identification number
ffff = AViiON system diagnostics error code

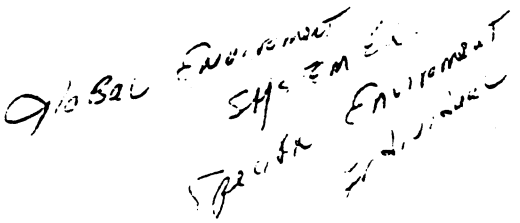
For interpretation of this error message, contact the Customer Support Center in Atlanta at 1-800-DGHELPS.

SECTION 4

MENU STRUCTURE - SYSTEM EXERCISER

This section describes the System Exerciser selection in the AViiON System Diagnostics. The System Exerciser allows you to run an overall system exerciser program or run individual tests on specific devices. You can determine the test specifications to be used for any selected test. The global environment setup allows you to select test specifications for the system exerciser test while the specific environment setup allows you to determine test specifications for individual tests. Depending upon the test being run, you can access up to three levels of status reports (general, detailed and level 2). This selection also allows you to view the first ten errors found while running a test.

Section 4.1 describes the Start system exerciser selection (this section includes error reports with failing FRU lists) on the System Exerciser Menu.
Section 4.2 describes the Select tests on the System Exerciser Menu.
Section 4.3 describes the Define global environment selection on the System Exerciser Menu.
Section 4.4 describes the Define test specific environment selection on the System Exerciser Menu.
Section 4.5 describes the View error log selection on the System Exerciser Menu.
Section 4.6 describes the View last status report selection on the System Exerciser Menu.
Section 4.7 describes the Display help screen selection on the System Exerciser Menu.
Section 4.8 describes the Return to main menu selection on the System Exerciser Menu.



Select 2 on the Main Menu (Figure 4-1) to go to the System Exerciser Menu.

```
AViiON System Diagnostics
Revision: 00.00

Data General Corporation
Proprietary Use Only

        Main Menu

1.  Run acceptance test
2.  View system exerciser menu
3.  View tools menu
4.  Display help screen
5.  Exit to SCM

Enter choice [1]:  2
```

Figure 4-1. Main Menu

The System Exerciser Menu shown in Figure 4-2 appears on the screen.

```
System Exerciser Menu

1.  Start system exerciser
2.  Select tests
3.  Define global environment
4.  Define test specific environment
5.  View error log
6.  View last status report
7.  Display help screen
8.  Return to main menu

Enter choice [1]:
```

Figure 4-2. System Exerciser Menu

4.1 START SYSTEM EXERCISER

This selection executes the System Exerciser test. The currently selected tests are run using the current specifications selected in the global environment setup and the test specific environment setup. If you do not want to change the default specifications, select 1 (Start system exerciser) and a General Status Report appears on the screen. This report lists all devices being tested and the status of each test. Figure 4-3 shows a sample AViiON 300 series station General Status Report.

General Status Report

Revision: 00.00 Total Hard Errors: 0000
Lapsed Time: 00:00:00 Current Time: 00:00:00

TEST ID	SUBSYSTEM DESCRIPTION	PASS COUNT	SOFT ERRORS	HARD ERRORS	KBYTES READ	KBYTES WRITTEN
3	Memory	0	0	0	0	0
2	CPU	0	0	0	0	0
1	Mouse Interface	0	0	0	0	0
0	Clock	0	0	0	0	0
9	LAN Controller	0	0	0	0	0
7	SCSI Controller	0	0	0	0	0

S - Update General Status Report
B - Block a Test
E - Error Report Toggle (ON)
M - Error and Status Log Menu
Ctrl-D to Stop all Tests
U - Unblock a Test
1 - Detailed Status Report

Figure 4-3. General Status Report (AViiON 300 Series Station)

The following briefly describes the control keys listed in the General Status Report:

S - Update General Status Report - This selection refreshes the screen and displays an updated General Status Report giving pass count and number of errors found.

B - Block a Test - This selection prevents a subsystem test from being run during the system exerciser test.

CAUTION

Blocking a LAN test may cause LAN errors.

The letter "B" appears after the Test ID entry number on the screen if a test is blocked. If you select a Test ID number not listed in the Test ID column, an "Invalid Test ID - Try Again" message appears on the screen and you are reprompted for the Test ID. If, after you select "B" and the Test ID prompt appears, you decide you do not want to block a test, enter New Line at the Test ID prompt and you are returned to the General Status Report screen.

E - Error Report Toggle (ON) - If the error report is toggled to the ON position and an error is found, an error report is displayed on the screen when found by the system exerciser. If the error report is toggled to the OFF position and an error is found, the error is reported on the General Status Report screen in the Soft or Hard Errors column but no error report is displayed on the screen and the error is not placed in the error log.

M - Error and Status Log Menu - This selection allows you to go directly to the Error and Status Log Menu (Figure 4-4).

```
+---------------------------------------+
        Error and Status Log Menu

        1  View Error Log
        2  Clear Error Log
        3  View Last Status Report
        4  Return to System Exerciser

        Enter choice [1]:

+---------------------------------------+
```

Figure 4-4. Error and Status Log Menu

The following briefly describes the Error Log Menu selections.

- o View Error Log - Select 1 on the Error Log Menu to get the first ten error reports logged after the System Exerciser is executed.

- o Clear Error Log - Select 2 on the Error Log Menu if you want to clear or delete all the errors found while running the System Exerciser.

- o View Last Status Report - Select 3 on the Error Log Menu to return to the last General Status Report issued before you entered the Error Log Menu.

- o Return to System Exerciser - Select 4 on the Error Log Menu to return to the System Exerciser test. A current General Status Report is displayed that includes new pass counts and errors found while you were accessing the Error Log Menu.

U - Unblock a Test - This selection allows you to unblock a test so that so that it will be run during the system exerciser test.

1 - Detailed Status Report - This selection gives a detailed report of a subsystem reporting errors in the General Status Report. Included in the report are the pass and error counts. Figure 4-5 shows a sample ESDI controller report.

. - Level 2 Status Report - This selection may be available on the Detailed Status Report screen depending on the subsystem being tested. This report gives you further error information such as the target and current test and error descriptions. Figure 4-6 shows a sample ESDI controller report.

```
+-----------------------------------------------------------------------+
                        Detailed Status Report
              ESDI Controller Status Report  Test ID: 7

 SUBTEST   UNIT   SUBTEST          PASS     ERRORS        KBYTES
   ID       NO    DESCRIPTION      COUNT    SOFT   HARD   READ   WRITTEN
   25        0    380MB ESDI Disk   961       0      0   19552        0



  S - Update General Status Report        Ctrl-D to Stop all Tests
  B - Block a Test                        U - Unblock a Test
  E - Error Report Toggle (ON)            2 - Level 2 Status Report
  1 - Detailed Status Report              M - Error and Status Log Menu

+-----------------------------------------------------------------------+
```

Figure 4-5. Detailed Status Report (ESDI Controller Shown)

```
+-----------------------------------------------------------------------+
                         Level 2 Status Report

 Controller:  ESDI Controller 0 (Test ID:7)
 Target:  322MB ESDI Disk Unit 0 (Subtest ID: 25)
 Current Test:  RANDOM Data Pattern:  Not Applicable (Non-Destructive)

 ERROR DESCRIPTION                    COUNT

 Data Compare Error                     0
 Memory Corruption Error                0



  S - Update General Status Report        Ctrl-D to Stop all Tests
  E - Error Report Toggle (ON)            1 - Detailed Status Report
  M - Error and Status Log Menu

+-----------------------------------------------------------------------+
```

Figure 4-6. Level 2 Status Report (ESDI Controller Shown)

- you want to change any of the default specifications currently in use, refer to Section 4.2 for test selection information, Section 4.3 for system exerciser test default information, or Section 4.4 for individual test default information.

The default test time for the system exerciser is infinity. Refer to Section 4.3 to change this time default. It is recommended that the system exerciser be run for a minimum of 15 minutes after an installation to verify proper operation of the system. Press Ctrl-D at any time to stop the System Exerciser test.

If the System Exerciser is successful, the General Status Report Total Hard Errors entry lists 0000 errors and asterisks (*) replace all numbers previously listed in the Test ID column.

If there is a failure, an error report describing the failing FRU is displayed. Figure 4-7 shows a sample AViiON 300 series station error report if the ESDI controller test should fail.

```
+-----------------------------------------------------------------------+
 ***********************************************************************
 *  Disk Test                                  Diag Rev:      00.00    *
 *  Rimfire ESDI                               Current Time:  00:00:00 *
 *  322MB ESDI Disk     Unit 0                 Elapsed Time:  00:00:00 *
 *  Data Compare Error                         Error Count:   1        *
    Hard Error                                 Pass Count:    0        *
    Failing FRU:   (1) Controller  (2) System Board   (3) Drive Cable   *
 ***********************************************************************

    Disk Starting Address (Block Number):    0 (hex)
    Disk Error Address (Block Number):       0 (hex)
    Blocks to Transfer:                      100
    Blocks Transferred:                      100

    Data Buffer Start Address:          159144 (hex)
    Data Buffer Offset (bytes):         0 (hex)

    Expected Data Pattern: -------- 00000001  00000002  00000003 00000004
    Received Data Pattern: -------- 2638783e  2638783e  2638783e 2638783e

    Total Words Miscompared:   12800

    Test:   RANDOM  Data Pattern:USR
    Mode:   Non-Destructive, scatter/gather, no optimization
+-----------------------------------------------------------------------+
```

Figure 4-7. Error Report (ESDI Disk Shown)

AVIION SYSTEMS POWER UP GOALS

FIND ANY FAULTS IN THE BASE SYSTEM,THE KERNAL SYSTEM AND LOAD PATH MUST BE INITIALIZED AND VERIFIED FROM PROM TO THE POINT OF ALLOWING D. NOSTIC MEDIA TO LOAD.

REPLACABLE UNIT (RU) CALL-OUTS.
IN CONFIDENCE WITH CUSTOMER,FIELD SERCVICE,AND MANUFACTURING REQUIREMENTS,ALL FAILURE REPORTS WILL ATTEMPT TO ISOLATE TO THE FRU LEVEL.

PERFORM SELF-TEST ON ALL SYSTEM UNITS
ALL UNITS INSTALLED IN THE SYSTEM,STANDARD AND OPTIONAL,MUST BE SIZED AND TESTED.THE LEVEL OF SELF-TEST IS A CHECK FOR HARD FAULTS.THIS DOES NOT INCLUDE I/O DEVICES.

SUPPORT A VIRTUAL CONSOLE
VIRTUAL CONSOLE SUPPORT IS REQUIRED TO ALLOW ACCESS TO ALL REGISTERS AND MEMORY LOCATIONS AND SUPPORT OF PROGRAM LOADING.

INITIALIZE AND VERIFY THE LOAD PATH
ALL FAULTS IN THE BASE SYSTEM WHICH WOULD PREVENT THE BOOTING AND EXECUTION OF DIAGNOSTIC SOFTWARE MUST BE FOUND.FAULTS THAT WOULD CAUSE MALFUNCTION OF THE DIAGNOSTICS COULD CAUSE ERRONEOUS ERROR INDICATIONS.

EASE OF ERROR REPORTING
TO SUPPORT CUSTOMER MODE OPERATION AND OTHER NEEDS OF FIELD SERVICE,EASE OF ERROR REPORTING DURING POWERUP IS REQUIRED

TEM INITIALIZATION
PERFORM THE REQUIRED SYSTEM CONFIGURATION AND INITIALIZATION TO ALLOW THE OPERATING SYSTEM TO BE BOOTED AND RUN.

PROM AND NOVRAM
VIRTUAL CONSOLE PROGRAM (VCP) WHICH INCLUDES;USER INTERFACE MENUS,MINIMAL COMMAND LINE INTERPRETER AND MNEMONIC DEBUGGER.

AUTOMATIC PROGRAM LOAD UTILITIES

BOOT ROUTINES,WHICH ARE REQUIRED DRIVERS FOR LOADING FROM LAN OR SCSI DEVICES.

POWERUP TESTS,ENOUGH TO VERIFY THAT THE DIAGNOSTIC OPERATING SYSTEM CAN BE LOADED

SYSTEM SIZING AND CONFIGURATION

4.2 SELECT TESTS

This selection allows you to select specific tests to be executed. The list of devices will depend on your system and system configuration. Select 2 (Select tests) on the System Exerciser Menu and a Test Selection screen similar to the one in Figure 4-8 is displayed. The current value (selected or deleted) is displayed in brackets next to each component.

```
Test Selection
--------------

Enter S to Select, D to Delete, New Line to Retain Current Value

    Memory [Selected]:                                    Selected
    CPU [Selected]:                                       Selected
    DUART Channel A [Selected]:                           Selected
    Mouse Interface [Selected]:                           Deleted
    Clock [Selected]:                                     Selected
    LAN Controller [Selected]:                            Selected
    Parallel Printer [Selected]:                          Deleted
    SCSI Controller
      MICROP 1578-15 Disk (Unit: 0) [Selected]:           Selected
      MICROP 1578-15 Disk (Unit: 1) [Selected]:           Selected
      ARCHIVE VIPER 150 Tape (Unit: 4) [Selected]:        Selected
      ARCHIVE VIPER 150 Tape (Unit: 6) [Selected]:        Selected

Press New Line to return to the previous menu.
```

Figure 4-8. Test Selection Menu (AViiON 300 Series Station)

Select the test(s) you want to run and press New Line to return to the System Exerciser Menu. The tests you selected to run should appear on the next General Status Report.

4.3 DEFINE GLOBAL ENVIRONMENT

This selection allows the user to specify the global environment to be used when running the System Exerciser test. Included in this setup are length of time to run the system exerciser, time interval for displaying status reports, and selecting output to a printer. Select 3 (Define global environment) on the System Exerciser Menu and a Global Environment Setup screen similar to the one in Figure 4-9 is displayed.

```
+-------------------------------------------------------------------------+
  Global Environment Setup
  ------------------------

  Type in new value or press New Line to retain the current value
  which is displayed in brackets

  Interval Between Status Reports (minutes) [15]:

  Multiple Page Error and Status Report Handling
        (1-Prompt for New Line 2-Delay Between Pages) [2]:

  Time Delay Between Pages for Multiple Page Reports (seconds) [5]:

  Error Reports to Printer (Y or N) [N]:

  Status Reports to Printer (Y or N) [N]:

  Time to Run Exerciser (minutes(0=infinity)) [0]:

  Error Handling (1-Continue 2-Prompt for New Line 3-Halt System) [1]:

  Error Type to Log (0-Soft Errors 1-Hard Errors 2-Soft and Hard Errors) [2]:
+-------------------------------------------------------------------------+
```

Figure 4-9. Global Environment Setup

The following describes the Global Environment Setup entries:

- Interval Between Status Reports - A General Status Report is displayed every 15 minutes (default) while the System Exerciser is running unless this default is changed. Enter the number of minutes between General Status Report screens and press New Line.

- Multiple Page Error and Status Report Handling - This entry refers to how the System Exerciser displays error reports or status reports requiring more than a one page screen display.

CAUTION

Selecting Option 1 (Prompt for New Line) between multiple pages can cause timeout errors in the exerciser since portions of the exerciser are halted until you enter New Line. The number of timeout errors increases with the length of time that passes before New Line is pressed.

Option 1 (Prompt for New Line) causes the exerciser to display the first page and then prompt the user for a New Line before displaying the next page; the user has to enter New Line between each page to proceed. Option 2 (Delay Between Pages) causes the exerciser to display a page and delay a specified number of seconds before displaying the next page. Very few tests require more than one page to display an error or status report. The CPU test uses multiple page error reports and the LAN test uses multiple page level 1 status reporting when running multi-node tests. Complete the entry and press New Line.

- Time Delay Between Pages for Multiple Page Reports - This entry specifies the number of seconds the exerciser waits between page displays of error or status reports with more than one screenful of information. Complete the entry and press New Line.

- Error Reports to Printer and Status Reports to Printer - These entries determine whether or not error and status reports are printed out in hard copy. The default is No. Complete the entry and press New Line.

- Time to Run Exerciser - This entry determines how long the System Exerciser will run. The default is infinity. Enter the number of minutes to run the exerciser test and press New Line.

- Error Handling - This entry determines how an error will be reported on the screen. The default is 1 (Continue) which allows the errors to be reported with no time delays. Selection 2 (Prompt for New Line) allows the error report to be displayed but you must press New Line to proceed with the exerciser. Selection 3 (Halt System) is for engineering purposes.

- Error Type to Log - This entry determines whether a soft error, hard error, or both soft and hard errors will be logged. The default is 2 (Soft and Hard Errors). Complete the entry and press New Line.

4.4 DEFINE TEST SPECIFIC ENVIRONMENT

This selection allows you to customize specifications (or turn prompting on) for individual tests. When prompting is on for a test, you can select the test setup for that test. The tests and test prompts will depend on your system and system configuration. Setup prompts can include test runtimes, test patterns, and nondestructive/destructive test modes. Select 4 (Define test specific environment) on the System Exercier Menu and a Test Prompting screen similar to the one in Figure 4-10 is displayed. The current value (prompt or no prompt) is displayed in brackets next to each component.

```
Test Prompting
--------------
Enter P for Prompting On, N for No Prompt, New Line to retain Current Value

      Memory [NO PROMPT]:                                    PROMPT
      CPU [NO PROMPT]:                                       PROMPT
      DUART Channel A [NO PROMPT]:                           PROMPT
      Mouse Interface [NO PROMPT]:                           PROMPT
      Clock [NO PROMPT]:                                     PROMPT
      LAN Controller [No PROMPT]:                            PROMPT
      Parallel Printer [NO PROMPT]:                          NO PROMPT
      SCSI Controller
        MICROP 1578-15 Disk (Unit: 0) [NO PROMPT]            PROMPT
        MICROP 1578-15 Disk (Unit: 1) [NO PROMPT]            PROMPT
        ARCHIVE VIPER 150 Tape (Unit: 4) [NO PROMPT]         PROMPT
        ARCHIVE VIPER 150 Tape (Unit: 6) [NO PROMPT]         PROMPT


      Press New Line to return to the previous menu
```

Figure 4-10. Test Prompting Screen (AViiON 300 Series Station)

If you choose NO PROMPT, the system exerciser will run the test using default specifications. You are returned to the System Exerciser Menu.

If you choose PROMPT, you will be prompted for test specific runtime parameters such as test pattern, destructive mode, etc., when you begin the system exerciser test.

4.4.1 Memory - The memory test consists of two subtests: random and retention. The random test randomly writes and reads data patterns to and from random buffers. This information is compared back to the original data pattern to detect data compare errors. The retention test verifies the capability of memory to retain data. The retention test writes a pattern to memory then reads the pattern back after a randomly selected time period. The expected pattern and the received patterns are compared for accuracy. If memory prompting is turned on, the following questions appear on the screen:

```
Initialization for Memory Test

   Use random test pattern in Memory Test? (Y or N) [Y]:

   Are all Entries Correct (Y or N) [Y]:
```

The default test pattern is random. Complete the entries and proceed to the next screen.

4.4.2 CPU - The Central Processing Unit (CPU) test verifies proper operation of the Motorola 88100 CPU chip and proper timing of the CPU to the system through a sequence of subtests. There is no prompting for the CPU.

4.3 DUART Channel A/B - This tests for proper operation of the asynchronous controller ports on the system board. Random data will be transmitted, received, and data compared. All combinations of baud rates, stop bits, data bits, and parity will be tested. If DUART Channel A (or B) prompting is turned on, questions similar to the following are displayed:

```
Initialization for DUART Channel B Test

  Enter loopback mode (1=Internal Loopback; 2=External Loopback) [1]: 1

  Are all entries correct (Y/N) [Y]:
```

The internal loopback mode is the default. If you choose the external loopback mode, be sure to install an external loopback plug before testing begins. Complete the entries and proceed to the next screen.

4.4.4 Clock - This test compares the time of boot clock located in PROM with the current time of day clock. A soft error is reported if there is more than a ten percent difference between the two values. The fifth consecutive soft error is reported as a hard error. Soft errors may indicate that the battery needs to be replaced. There is no prompting for the Clock test.

4.4.5 LAN Controller - This test verifies proper operation of the LAN controller board (AViiON 5000 series station) or the LAN controller IC on the system board (AViiON 300 series system). If LAN controller prompting is turned on, the following question appears on the screen:

```
Test Mode (1-Internal Loopback 2-External Loopback 3-Node to Node) [1]:
```

The default mode is selection 1-Internal Loopback. If you choose selection 2 - External Loopback, packets are looped back through the transceiver testing the transmit and receive circuitry. You must install an external loopback plug if you are not connected to a network before you start this test. If you choose selection 3 - Node-to-Node, test packets are transmitted to other nodes on the network. This mode tests connectivity to other LAN nodes which support test packets (packets that conform to IEEE 802.2 protocol). There is also a slave mode option for the Node-to-Node test. Slave mode only responds to packets initiated by other LAN nodes; it does not transmit any test or broadcast packets. Complete the entries and proceed to the next screen.

4.4.6 ESDI Controller - This tests the Enhanced Small Disk Interface (ESDI) controller board and any internal disk drives connected to the controller. The default test for the ESDI controller is the Random test. The following lists possible test definitions:

- Random (default) - This destructive test randomly writes and reads the disk drive. Data is compared after each read operation.
- Odd/Even - This selection is used mainly for developmental purposes. This test writes a data pattern on every odd cylinder, then writes a data pattern on every even cylinder, then compares the two data patterns for accuracy.
- Seek - This selection is used mainly for developmental purposes. The test performs 4000 seek operations to random locations on the drive for each test pass. A read operration is issued after each seek operation. It then calculates the average disk seek time.
- Sequential/Random - This selection performs two sequential passes and three random passes on the disk per test pass.
- Sequential - This test sequentially writes and reads the disk beginning at the first sector of the disk to be tested.

If ESDI controller prompting is turned on, questions similar to the following appear on the screen (the default Random test is used):

```
Initialization for Rimfire ESDI Controller Test

Initializing Unit 0: 322MB ESDI Disk

     Test Definitions...

      ODD/EVEN    - Odd and even cylinder test
      RANDOM      - Random test (address and transfer size)
      SEEK        - Random seek test
      SEQ/RAN     - 2 sequential passes and 3 random passes
      SEQUENTIAL  - Sequentially write and read disk

     Test (ODD/EVEN, RANDOM, SEEK, SEQ/RAN, SEQUENTIAL) [RANDOM]:

     Destructive testing (NO, YES) [NO]: y

     WARNING - You have selected a DESTRUCTIVE test.
     This test will destroy data on the disk.

     Are you sure you want to do this (NO, YES) [NO]: yes

      Data Pattern Definitions...

        ADR - Data equals disk block test
        ALO - All bits are one
        ALT - Alternating bits of ones and zeroes
        ALZ - All bits are zero
        BAD - Byte address data (byte 0 = 0, byte 1 = 1...)
        MEM - Data equals memory address
        RAN - 32-bit random data
        ROT - Rotating F8743210 data (1 bit shift left per phase)
        USR - User defined data (up to 8 32-bit words)

     Data pattern (ADR, ALO, ALT, ALZ, BAD, MEM, RAN, ROT, USR) [RAN]: alo

     Max sectors per transfer (1 - 200) [50]:

     Minimum disk address for testing in hex (1 - 9bdbf) [1]:

     Maximum disk address for testing in hex (1 - 9bdbf) [9bdbf]:

     Max disk operations in progress (1 - 128) [8]:

     Envoke read after write (NO, YES) [YES]: no
```

Do scatter/gather operations (NO, YES) [YES]:

Error type to loop (ALL, DATA CMP, HARD, MEM CORRUPT, NONE, SOFT) [NONE]:

How many times should an operation be retried (0 - 11) [1]:

Are all entries correct (NO, YES) [YES]:

Complete the entries and proceed to the next screen.

4.4.7 SCSI Controller - This tests the Small Computer Systems Interface (SCSI) controller board and any external disk or tape drives connected to the controller. All tape drive tests are destructive. The default test for the 150MB tape drive on the SCSI controller is Sequential 3 (SEQ3). The following lists possible test definitions (note that these tests are listed in order of longest completion time to shortest completion time):

- Positioning - This test performs with minimum data transfer and maximum positioning activity.. This test takes the longest period of time to complete one pass and is not suitable for field use.
- Random 2 - This test performs a random test with full readback. This test takes a long period of time to complete so may not be suitable for field use.
- Random 1 - This test performs a random test with partial readback. This test takes a long period of time to complete so may not be suitable for field use.
- Sequential 1 - This test writes ten files of random size, then reads back the tenth file, then reads back the other nine files in sequential order. It repeats this pattern until end of tape or termination by the user. This is the longest ~~of all~~ the sequential tests.
- Sequential 3 (default) - This test randomly writes ten files, then ~~reads~~ the ten files back and compares the data. It then writes the remainder of the tape as one file, reads it back and compates the data. This test takes less time than the sequential 1 test (approximately 20 minutes for a 40MB tape drive) to complete.
- Sequential 2 - This media performance test is the default for the customer mode Acceptance test. This test writes the entire tape as one file then reads back the file. This sequential test requires the least amount of time to complete.

-- SCSI controller prompting is turned on, questions similar to the following appear on the screen (the default SEQ3 is used):

```
Initialization for Rimfire SCSI Controller Test

     CAUTION:  Tape tests destroy all data on the tape.
     Please insert write-enabled scratch media for all tape units to be
     tested.
     Press New Line when ready to proceed.

  Initializing Unit 4:  ARCHIVE VIPER 150 Tape

        Test Definitions...

        POSITIONING - Positioning with minimum data transfer
        RAN1        - Random test with partial readback
        RAN2        - Random test with full readback
        SEQ1        - Write/Read multiple files
        SEQ2        - Write/Read single file (no positioning)
        SEQ3        - Write/Read multiple files (23%positioning activity)

    Test (POSITIONING, RAN1, RAN2, SEQ1, SEQ2, SEQ3) [SEQ3]:

        Data Pattern Definitions...

        ADR - 32-bit device address data
        ALO - All bits are one
        ALT - Alternating bits of ones and zeroes
        ALZ - All bits are zero
        BAD - Byte address data (byte 0 = 0, byte 1 = 1...)
        RAN - 32-bit random data
        ROT - Rotating F8743210 data (1 bit shift left per pass)
        USR - User defined data (up to 8 32-bit words)

    Data pattern (ADR, ALO, ALT, ALZ, BAD, RAN, ROT, USR) [RAN]: alo

        Drive in buffered mode (NO, YES) [YES]:

        Transfer size (in records) (1 - 200) [128]:

        Error to loop (DATA COMPARE, MEMORY CORRUPT, NONE) [NONE]:

        Are all entries correct (NO, YES) [YES]:
```

Complete the entries and proceed to the next screen.

4.4.8 16-Line Async Controller or Host Adapter - This tests the asynchronous controller for the AViiON 5000 series system. For internal loopback test information, refer to the appropriate vendor documentation. For external loopback testing, random data will be transmitted, received, and data compared. All combinations of baud rates, stop bits, data bits, and parity will be tested. If 16-line async controller or host adapter prompting is turned on, questions similar to the following are displayed:

```
Initialization for 16-line Async Controller Test

     Enter loopback mode (1=Internal Loopback; 2=External Loopback) [1]: 2

     Are all entries correct (Y/N) [Y];

     Please install external loopback connectors now
     Press <Enter> when ready to proceed

     Checking ports for loopback connections
```

The internal loopback mode is the default. If you choose the external loopback mode, be sure to install external loopback plugs on the lines you wish to test when prompted. It is possible to loopback one port to another or one port to itself. Complete the entries and proceed to the next screen.

4.4.9 Mouse Interface - This tests for proper operation of the mouse port. Random data will be transmitted, received, and data compared. All combinations of baud rates, stop bits, data bits, and parity will be tested.

4.4.10 Printer - This test checks the PROM configuration to determine the type of parallel printer interface to use. If Printer prompting is on, questions such as how often to run the printer test, number of lines and columns per printer pass, whether to formfeed or single line between each printer pass, and what character to print when testing are listed.

4.5 VIEW ERROR LOG

This selection allows you to view the first ten errors logged after the System Exerciser is executed. Select 5 (View error log) on the System Exerciser Menu and first error report is displayed. Press New Line to proceed through all error reports. Press ESC to exit and return to the System Exerciser Menu.

4.6 VIEW LAST STATUS REPORT

This selection allows you to view the last General Status Report logged during the last System Exerciser session. Press New Line to return to the System Exerciser Menu.

4.7 DISPLAY HELP SCREEN

Select 7 (Display help screen) on the System Exerciser Menu to get a brief description of all System Exerciser Menu selections.

4.8 RETURN TO MAIN MENU

Select 8 (Return to main menu) on the System Exerciser Menu to return to the Main Menu.

SECTION 5

MENU STRUCTURE - TOOLS

This section describes the Tools selection in the AViiON System Diagnostics. Tools allows you to run disk media maintenance functions such as formatting disks, a tape tension adjustment utility, and a network connection test. Tools for the AViiON 300 workstation also include graphics tests, and keyboard and mouse tests. A Help selection gives a brief description of the Tools Menu selections.

Section 5.1 describes the View Disk Media Maintenance Menu selection on the Tools Menu.
Section 5.2 describes the Run tape adjustment utility selection on the Tools Menu.
Section 5.3 describes the View Graphics Tools Menu selection on the Tools Menu.
Section 5.4 describes the Test network connections (TDR) selection on the Tools Menu.
Section 5.5 describes the Run keyboard test selection on the Tools Menu.
Section 5.6 describes the Run mouse test selection on the Tools Menu.
Section 5.7 describes the Initialize NOVRAM selection on the Tools Menu.
Section 5.8 describes the Display help screen selection on the Tools Menu.
Section 5.9 describes the Return to main menu on the Tools Menu.

Select 3 on the Main Menu (Figure 5-1) to enter the Tools Menu (Figure 5-2).

```
AViiON System Diagnostics
Revision:  00.00

Data General Corporation
Proprietary Use Only

        Main Menu

1.  Run acceptance test
2.  View system exerciser menu
3.  View tools menu
4.  Display help screen
5.  Exit to SCM

Enter Choice [1]:  3
```

Figure 5-1. Main Menu

```
+-----------------------------------------------+
                Tools Menu

          1.  View Disk Media Maintenance Menu
          2.  Run tape adjustment utility
          3.  View Graphics Tools Menu
          4.  Test network connection (TDR)
          5.  Run keyboard test
          6.  Run mouse test
          7.  Initialize NOVRAM
          8.  Display help screen
          9.  Return to main menu


          Enter Choice [7]: 1

+-----------------------------------------------+
```

Figure 5-2. Tools Menu

elect the Tool you want to use and refer to the appropriate section.

.1 VIEW DISK MEDIA MAINTENANCE MENU

t 1 (View Disk Media Maintenance Menu) on the Tools Menu and
isk Media Maintenance Menu (Figure 5-3) is displayed:

```
+-----------------------------------------------+
          Disk Media Maintenance Menu

          1. Map new defects
          2. Display defect list
          3. Verify disk
          4. Format disk
          5. Display help screen
          6. Return to Tools Menu

          Enter choice [6]:
+-----------------------------------------------+
```

Figure 5-3. Disk Media Maintenance Menu

Section 5.1.1 contains Map new defects information; Section 5.1.2 contains Display defect list information; Section 5.1.3 contains Verify disk information; and Section 5.1.4 contains Format disk information. The Display help screen selection describes the Disk Media Maintanance Menu selections. The Return to Tools Menu selection allows you to return to the Tools Menu. Enter the desired selection and refer to the appropriate section.

5.1.1 Map New Defects

This selection allows you to manually map out one or more defects (bad blocks) to prevent usage of those defects on one or more disks. To specify a bad disk defect, enter the address of the defect. This address can be represented in different ways, depending on the source of the address. When you are asked, select the address representation which matches the address you want to map out. Possible address modes are Logical (default), Physical and Bytes from Index.

The Logical address mode requires a logical address (single number) and is used when mapping ESDI defects or SCSI defects. The Physical address mode requires cylinder, head, and sector information and can be used when mapping ESDI defects. The Bytes from Index (BFI) address mode requires head, cylinder, offset, and length information and can be used when mapping ESDI defects.

Select 1 (Map new defects) on the Disk Media Maintenance Menu and a Target Selection screen similar to the one in Figure 5-4 is displayed. Target selections are dependent on your system configuration.

```
+-------------------------------------------------------------------+
  Target Selection
  ----------------

  Enter S to Select, D to Delete, New Line to Retain Current Value

       ESDI Controller 0
         322MB ESDI Disk (Unit:  0) [Deleted]:          Selected
       SCSI Controller 0
         MICROP 1578-15 Disk (Unit:  1) [Deleted]:      Selected
       SMD Controller 1
         1029MB SMD Disk (Unit:  4) [Deleted]:          Deleted

  Press New Line to Start - Press Q to Exit
+-------------------------------------------------------------------+
```

Figure 5-4. Target Selection Screen

Select the target(s) you want to map and press New Line.

ction 5.1.1.1 describes a mapping new defects session when selecting a logical address mode for a SCSI disk.
Section 5.1.1.2 describes a mapping new defects session when selecting a physical address mode for an ESDI disk.
Section 5.1.1.3 describes a mapping new defects session when selecting a BFI address mode for an ESDI disk. Refer to the applicable section.

5.1.1.1 Mapping New Defects on a SCSI Disk Using Logical Address Mode - Complete the entries as they appear on the screen (Figure 5-5).

```
+-------------------------------------------------------------------+
  Initializing for Map New Defects Selection under Disk Media Maintenance.

  Radix for all input/output (DECIMAL, HEX) [DECIMAL]:

  Input session for SCSI Controller 0 Unit:  1

  Adding defects to unit 1 on the SCSI Controller 0.

  Enter the logical block address of each defect at the following prompt.
  To conclude the input of defects, press New Line at any prompt.
  You will have an oportunity to change or delete any entry.

    Logical address (1 - 631051):  2112
    Logical address (1 - 631051): 3223
    Logical address (1 - 631051): 40325
    Logical address (1 - 631051):

  Defects entered as follows:

    Defect ID 1  :  Logical Block:  2112
    Defect ID 2  :  Logical Block:  3223   BAD TRACK
    Defect ID 3  :  Logical Block:  40325

  Is this defect list complete and correct (NO, YES) [NO]:

  Do you want to print the defect list? (NO, YES) [NO]:

  CAUTION - Data will be lost when mapping defects!
            Make sure you have a current backup of your disk
            before proceeding.

  Do you want to map the defects entered for this disk (NO, YES) [NO]:
+-------------------------------------------------------------------+
```

Figure 5-5. Mapping New Defects Screen (SCSI Disk/Logical Address)

If the defect list is complete and correct, answer yes. If you want to map the defects entered, answer yes. The new defects are mapped. Upon completion, a screen similar to the one in Figure 5-6 is displayed. Press New Line to return to the Disk Media Maintenance Menu.

```
+-------------------------------------------------------------------------+
  Defect mapping in progress for unit 1

  Mapping of defects complete

                        Press New Line to Proceed
+-------------------------------------------------------------------------+
```

Figure 5-6. Mapping New Defects Completion Screen

If the defect list is not complete and/or correct, answer no to add, delete or modify the defect list. Figure 5-7 shows the entries that appear if you want to modify the defect list.

```
Do you want to add more defects (NO, YES) [NO]:

Do you want to change or delete defects (NO, YES) [NO]: yes

Enter defect ID to modify/delete, or press New Line
to display all defects:  1

Defect ID 1: Logical Block Address: 2112

Do you want to delete this defect (NO, YES) [NO]:

Do you want to change this defect (NO, YES) [NO]: yes

Logical address [2112]:  2002

Defects entered as follows:

  Defect ID 1  :  Logical Block:  2002
  Defect ID 2  :  Logical Block:  3223   BAD TRACK
  Defect ID 3  :  Logical Block:  40325

Is this defect list complete and correct (NO, YES) [NO]: yes

Do you want to print the defect list? (NO, YES) [NO]:

CAUTION - Data will be lost when mapping defects!
          Make sure you have a current backup of your disk
          before proceeding.

Do you want to map the defects entered for this disk (NO, YES) [NO]: y
```

Figure 5-7. Adding, Deleting or Modifying the Defect List (Modifying Example Shown)

Upon completion, a screen similar to the one in Figure 5-6 is displayed. Press New Line to return to the Disk Media Maintenance Menu.

5.1.1.2 **Mapping New Defects on an ESDI Disk Using Physical Address Mode** - Complete the entries as they appear on the screen (Figure 5-8).

```
Initializing for Map New Defects Selection under Disk Media Maintenance.

Radix for all input/output (DECIMAL, HEX) [DECIMAL]:

Input session for ESDI Controller 0 Unit:  0

Adding defects to Unit 0 on the ESDI Controller 0.

Address modes are specified as follows:

      BYTES FROM INDEX (BFI) = cylinder, head, bytes from index,
                               and length of defect in bits.
      LOGICAL = logical block address (one number).
      PHYSICAL = cylinder, head and sector.

Address mode (BFI, LOGICAL, PHYSICAL) [LOGICAL]:  p

Enter cylinder, head, and sector of each defect at the following prompts.
To conclude the input of defects, press New Line at any prompt.
You will have an opportunity to change or delete any entry.

  Cylinder (1 - 1223):  4
  Head (0 - 14):  5

  Should this entire track be mapped (NO, YES) [NO]: n

  Sector (0 - 34):  3

  Defects entered as follows:

    Defect ID 1:  Cyl: 4   Head: 5   Sector:  3

Is this defect list complete and correct (NO, YES) [NO]: y

Do you want to print the defect list? (NO, YES) [NO]:

CAUTION - Data will be lost when mapping defects!
          Make sure you have a current backup of your disk
          before proceeding.

Do you want to map the defects entered for this disk (NO, YES) [NO]: y
```

Figure 5-8. Mapping New Defects Screen (ESDI Disk/Physical Address)

Upon completion, a screen similar to the one in Figure 5-6 is displayed. Press New Line to return to the Disk Media Maintenance Menu.

5.1.1.3 Mapping New Defects on a ESDI Disk Using Bytes From Index (BFI) Mode - Complete the entries as they appear on the screen (Figure 5-9).

```
Initializing for Map New Defects Selection under Disk Media Maintenance.

Radix for all input/output (DECIMAL, HEX) [DECIMAL]:

Input session for ESDI Controller 0 Unit:  0

Adding defects to Unit 0 on the ESDI Controller 0.

Address modes are specified as follows:

      BYTES FROM INDEX (BFI) = cylinder, head, bytes from index,
                               and length of defect in bits.
      LOGICAL = logical block address (one number).
      PHYSICAL = cylinder, head and sector.

Address mode (BFI, LOGICAL, PHYSICAL) [LOGICAL]:  b

Enter cylinder, head, and byte offset from index and length (in bits)
of each defect at the following prompts.
To conclude the input of defects, press New Line at any prompt.
You will have an opportunity to change or delete any entry.

  Cylinder (1 - 1223):  4
  Head (0 - 14):  5

  Should this entire track be mapped (NO, YES) [NO]: n

  Bytes from Index:  3
  Length (1-512) [16]:  16

  Defects entered as follows:

    Defect ID 1:  Cyl: 4  Head: 5  Offset:  3   Length:  16

Is this defect list complete and correct (NO, YES) [NO]: y

Do you want to print the defect list? (NO, YES) [NO]:

CAUTION - Data will be lost when mapping defects!
          Make sure you have a current backup of your disk
          before proceeding.

Do you want to map the defects entered for this disk (NO, YES) [NO]: y
```

Figure 5-9. Mapping New Defects Screen (ESDI Disk/BFI Address)

5.1.2 Display Defect List

This selection allows you to read and display the original OEM vendor defects for one or more disks. Select 2 (Display defect list) on the Disk Media Maintenance Menu and a Target Selection screen similar to the one in Figure 5-10 is displayed. Target selections are dependent on your system configuration.

```
+-------------------------------------------------------------------------+
  Target Selection
  ----------------

  Enter S to Select, D to Delete, New Line to Retain Current Value

       ESDI Controller 0
         322MB ESDI Disk (Unit:  0) [Deleted]:            Deleted
       SCSI Controller 0
         MICROP 1578-15 Disk (Unit:  1) [Deleted]:        Selected
       SMD Controller 1
         1029MB SMD Disk (Unit:  4) [Deleted]:            Deleted

  Press New Line to Start - Press Q to Exit
+-------------------------------------------------------------------------+
```

Figure 5-10. Target Selection Screen (SCSI Disk Selected)

Select the target(s) having defects you want to view and press New Line. A screen similar to the one in Figure 5-11 is displayed. Complete the entries as they appear on the screen to determine the address mode of the defect list.

```
Initializing for Display Defect List under Disk Media Maintenance.

   Radix for all input/output (DECIMAL, HEX) [DECIMAL]:

   SCSI Controller 0 Unit: 1

   SCSI defect lists can be obtained in any one of the three
   address modes which are specified as follows:

       BYTES FROM INDEX (BFI) = cylinder, head, bytes from index,
                                and length of defect in bits.
       LOGICAL = logical block address (one number).
       PHYSICAL = cylinder, head and sector.

   Address mode (BFI, LOGICAL, PHYSICAL) [BFI]:

   Getting defects .............XX defects read.

       Press New Line to Proceed
```

Figure 5-11. Display Defect List Address Mode (SCSI Disk Selected)

Press New Line to display the defect list. If you chose a BFI address mode for an ESDI disk, a defect list similar to the format in Figure 5-12 is displayed. If you chose a physical addess mode for an ESDI disk, a defect list similar to the one in Figure 5-13 is displayed. If you chose a logical address mode for a SCSI disk, a defect list similar to the one in Figure 5-14 is displayed.

```
   Defect list for Unit 0 on the ESDI Controller is as follows...

     Defect ID 1  : Cyl: 1   Head: 12   Offset: 3934    Length: 1
     Defect ID 2  : Cyl: 2   Head: 12   Offset: 3934    Length: 1
     Defect ID 3  : Cyl: 3   Head: 12   Offset: 3934    Length: 1
     Defect ID 4  : Cyl: 4   Head: 12   Offset: 3934    Length: 1

     Do you want to print the defect list? (NO, YES) [NO]:

                        Press New Line to continue
```

Figure 5-12. Displaying the Defect List (BFI Address Mode)

```
Defect list for Unit 0 on the ESDI Controller is as follows...

  Defect ID 1  : Cyl: 434   Head: 14   Sector: 8
  Defect ID 2  : Cyl: 598   Head: 6    Sector: 34
  Defect ID 3  : Cyl: 634   Head: 12   Sector: 24
  Defect ID 4  : Cyl: 1033  Head: 6    Sector: 5

  Do you want to print the defect list? (NO, YES) [NO]:

                Press New Line to continue
```

Figure 5-13. Displaying the Defect List (Physical Address Mode)

```
Defect list for Unit 1 on the SCSI Controller is as follows...

  Defect ID 1  : Logical Block: 227835
  Defect ID 2  : Logical Block: 313657
  Defect ID 3  : Logical Block: 332757
  Defect ID 4  : Logical Block: 542039

  Do you want to print the defect list? (NO, YES) [NO]:

                Press New Line to continue
```

Figure 5-14. Displaying the Defect List (Logical Address Mode)

5.__.3 Verify Disk

This selection allows you to run a verification utility on one or more disks to ensure that all defects have been found. Select 3 (Verify) on the Disk Media Maintenance Menu and a Target Selection screen similar to the one in Figure 5-15 is displayed. Target selections are dependent on your system configuration.

```
+-------------------------------------------------------------------+
  Target Selection
  ----------------

  Enter S to Select, D to Delete, New Line to Retain Current Value

       ESDI Controller 0
         322MB ESDI Disk (Unit:  0) [Deleted]:          Deleted
       SCSI Controller 0
         MICROP 1578-15 Disk (Unit:  1) [Deleted]:      Selected
       SMD Controller 1
         1029MB SMD Disk (Unit:  4) [Deleted]:          Deleted

  Press New Line to Start - Press Q to Exit
+-------------------------------------------------------------------+
```

Figure 5-15. Target Selection Screen

ect the target(s) having defects you want to verify and press New Line. s example verifies defects found on the SCSI disk. Complete the entries as they appear on the screen (Figure 5-16).

```
+-------------------------------------------------------------------+
  Initializing for Verify Selection under Disk Media Maintenance.

    Radix for all input/output (DECIMAL, HEX) [DECIMAL]:


  Input session for SCSI Controller Unit: 1

    Should the verify be destructive (NO, YES) [NO]:

    Enter the number of passes (1-7) [3]:

  Do you still want to verify this disk (NO, YES) [NO]: y
+-------------------------------------------------------------------+
```

Figure 5-16. Verify Entries

If you do not want to verify the disk, answer no to return to the Disk Media Maintenance Menu. To verify the disk, answer yes and the screen in Figure 5-17 acknowledges your selection.

```
+-------------------------------------------------------------------+
  Disk Media Maintenance functions selected:

   Verify selected for Unit 1 on SCSI Controller 0.




   Do you want to cancel ALL selected functions (NO, YES) [YES]: n
+-------------------------------------------------------------------+
```

Figure 5-17. Verify Acknowledgement

If you want to cancel all selected functions, answer yes and you are returned to the Disk Media Maintenance Menu. To keep all selected functions, answer no and a Status Report similar to the one in Figure 5-18 is displayed.

```
+-------------------------------------------------------------------+
                          Status Report

  Revision:  XXX.XXX                      Elapsed Time: hh:mm:ss


                                          CURRENT       DEFECTS
  CONTROLLER          UNIT   OPERATION    TRACK         FOUND
  ----------          ----   ---------    -------       -------
  SCSI Controller 0    1     VERIFY         308           0



  S - Display Status Report          Ctrl-D to Cancel before Complete
+-------------------------------------------------------------------+
```

Figure 5-18. Verify Status Report

The Status Report screen refreshes every ten seconds with updated verification information. Press S to manually update the screen. To cancel the verify function and get the last status report available, press Ctrl-D. Press New Line after viewing the last status report and a Media Maintenance Summary similar to the one in Figure 5-19 is displayed.