Model 102

Mirage Diagnostics

User's Manual

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REVISION HISTORY

ECO No.	Date	Description	Pages
0523	3/4/86	New Cover	

Booting Mirage Diagnostics from magnetic tape

Step 1. Mount 400-273-00 tape on tape drive and put the drive on-line. Be sure that your BPI setting matches the tape you received.

Step 2. Program Load - The method of program load varies for for different processors. Some of the possibilities are described here.

If your system does not have a program load option, consult your processor manual.

If your system has front panel switches set them to 100022 for the primary tape drive, or 100062 for the secondary drive. Then press program load switch.

For the S140 virtual console, set 11A to 100022 for the primary tape drive, or 100062 for the secondary drive. Then enter 100022L (or 100062L).

For the S120 virtual console, enter 22H for the primary tape drive or 62H for the secondary drive.

Loading Mirage Diagnostics from tape to your system disk

Step 1. While the system is running, mount the 400-273-00 tape and put the drive on-line. Be sure that you have correct BPI setting.

Step 2. For an RDOS system enter the commands:

```
DIR %MDIR%
INIT MT0
LOAD/R/V MT0:2
RELEASE MT0
```

For an AOS system enter the commands:

```
SUPERUSER ON
DIR :
DELETE/V MDIAG.+
X RDOS LOAD/V @MTA0:2 MDIAG.DC/C MDIAG.SV
REWIND @MTA0
ACL/V MDIAG.+ +,RE
SUPERUSER OFF
```

Loading Mirage Diagnostics from diskette to your system disk

Step 1. While the system is running, mount the release diskette on your floppy disk drive.

Step 2. For an RDOS system enter the commands:

```
DIR to the appropriate diskette unit.
MOVE/R/V  (master directory) MDIAG.SV
RELEASE (diskette unit)
```

For an AOS system enter the commands:

```
DIR :
SUPERUSER ON
LOAD/R/V @DPI10
ACL/V MDIAG.SV +,RE
SUPERUSER OFF
```

Booting Mirage Diagnostics from your system disk

You must first have loaded MDIAG.SV onto your disk.

Step 1. Perform your standard boot procedure up to the point when the system asks you to enter filename (RDOS) or system pathname (AOS).

Step 2. Enter MDIAG.SV followed by carriage return.

Mirage Diagnostics (MDIAG) operation

MDIAG is a stand-alone program which runs interactively. Whenever you are asked a question, the default answer will be displayed in square brackets (i.e. []). You can select the default values by entering New Line or Carriage Return.

The program first finds all of the Mirage lines on your system. As only you can determine whether the lines found are correct, MDIAG asks you to look at the line numbers displayed and confirm that they are correct. Shown below is a sample dialogue for this section of MDIAG.

```
MDIAG:    Mirage Diagnostics - Revision n.m
          Custom Systems, Incorporated

What device code have you selected for Mirage? [ 40 ]

How many passes do you want to run? [ 50 ]

** Checking for responding Mirage lines

I will display each Mirage line found and its associated
board revision number.  The first line should be zero, and
there should not be any gaps between line numbers.

        LINE NUMBER     MIRAGE REVISION NUMBER

             0                    1
             1                    1
             .                    .
             n                    1

Are the lines found those that you expected? ([Y]/N)   N==>

When the lines found are not correct, there may be a
problem with the installation.  In particular, you
might need to check the line switch settings.  Please
refer to the Mirage Hardware Installation Guide in your
Mirage Reference Manual, if you are not certain that
the installation is correct.

At this point you have three choices:

        Q  -  Quit running diagnostics
        L  -  Loop on checking for a response from a line
        C  -  Continue testing of lines 0 thru m

Case 1:   Please enter the letter opposite your choice:  L==>

On what line number (in octal) do you want to loop? 2

        SELECTED   LINE   REV   FOUND
        LOOP       NO.    NO.   OR NOT
                   2      1    Not found
```

Case 2: Please enter the letter opposite your choice: C==>

** Finished checking for responding Mirage lines

When the Mirage lines are correct, the program will perform various tests on each of the lines found. There will be messages to inform you which test is currently being performed on which line. Following is an example of the program display for the case that there are two Mirage lines (0 and 1) and no errors are encountered:

--Testing line 0

** Starting handshake protocol

** Starting error protocol

** Starting DMA interference test

** Starting boot protocol
- Subtest: Prom boot
- Subtest: File Request
- Subtest: Import File

--Finished testing line 0

--Testing line 1

** Starting handshake protocol

** Starting error protocol

** Starting DMA interference test

** Starting boot protocol
- Subtest: Prom boot
- Subtest: File Request
- Subtest: Import File

--Finished testing line 1

** Mirage Diagnostics finished

Do you want to rerun? (Y/[N]) Y==> (returns to ask how many passes)

MDIAG errors

The standard error display includes an error code and various other values which may help in locating the error.

ERROR CODE	DESCRIPTION
1	Timeout - Host computer did not get a response from the Mirage board within the timeout limit. MAIN PC - this value will be the address within the main program (MDIAG) where the error routine was called. PREV PC - this value will be the address within the subroutine program (XRECV in MDSUBS) where the error was first encountered. LAST DOA - this value will be the most recent DOA sent to the Mirage board. LAST DIA - this value will be the most recent DIA sent to the host from the Mirage board. EXP DIA - this value will be the DIA value which the Mirage board should have sent to the host.
2	The validity bit (bit 9) was not set on the DIA received by the host. Bit 9 must always be on. MAIN PC - this value will be the address within the main program (MDIAG) where the error routine was called. PREV PC - this value will be the address within the subroutine program (XRECV in MDSUBS) where the error was first encountered. LAST DOA - this value will be the most recent DOA sent to the Mirage board. LAST DIA - this value will be the most recent DIA sent to the host from the Mirage board. EXP DIA - this value will be the DIA value which the Mirage board should have sent to the host.

ERROR CODE	DESCRIPTION
3	Bit 8 was erroneously set on the DIA received by the host. Bit 8 should never be on. MAIN PC - this value will be the address within the main program (MDIAG) where the error routine was called. PREV PC - this value will be the address within the subroutine program (XRECV in MDSUBS) where the error was first encountered. LAST DOA - this value will be the most recent DOA sent to the Mirage board. LAST DIA - this value will be the most recent DIA sent to the host from the Mirage board. EXP DIA - this value will be the DIA value which the Mirage board should have sent to the host.
4	The DIA received by the host had the wrong line number in it. MAIN PC - this value will be the address within the main program (MDIAG) where the error routine was called. PREV PC - this value will be the address within the subroutine program (XRECV in MDSUBS) where the error was first encountered. LAST DOA - this value will be the most recent DOA sent to the Mirage board. LAST DIA - this value will be the most recent DIA sent to the host from the Mirage board. EXP DIA - this value will be the DIA value which the Mirage board should have sent to the host.

ERROR CODE	DESCRIPTION
5	The DIA received by the host had the wrong Mirage request code. MAIN PC - this value will be the address within the main program (MDIAG) where the error routine was called. PREV PC - this value will be the address within the subroutine program (XCHKR in MDSUBS) where the error was first encountered. LAST DOA - this value will be the most recent DOA sent to the Mirage board. LAST DIA - this value will be the most recent DIA sent to the host from the Mirage board. EXP DIA - this value will be the DIA value which the Mirage board should have sent to the host.
7	DMA transfer error - the DMA transfer from Mirage to the host was not correct. This error is reported when the host's buffer has not been modified or, alternatively, the area beyond the buffer has been modified. This is a possible symptom of an address or counter register error. MAIN PC - this value will be the address within the main program (MDIAG) where the error was detected. PREV PC - this value is meaningless. LAST DOA - this value will be the most recent DOA sent to the Mirage board. LAST DIA - this value will be the most recent DIA sent to the host from the Mirage board. EXP DIA - this value is meaningless.

ERROR CODE	DESCRIPTION
10	The revision number received from Mirage on a DMA transfer does not agree with the revision number received during the line select test. If the revision number on line select is correct, this points to a DMA transfer problem. MAIN PC - this value will be the address within the main program (MDIAG) where the error was detected. PREV PC - this value is meaningless. LAST DOA - this value will be the most recent DOA sent to the Mirage board. LAST DIA - this value will be the most recent DIA sent to the host from the Mirage board. EXP DIA - this value is meaningless.
11	The filename received from Mirage on a DMA transfer is not correct. This may indicate a DMA transfer error. MAIN PC - this value will be the address within the main program (MDIAG) where the error was detected. PREV PC - this value is meaningless. LAST DOA - this value will be the most recent DOA sent to the Mirage board. LAST DIA - this value will be the most recent DIA sent to the host from the Mirage board. EXP DIA - this value is meaningless.

Switch and control character functions

MDIAG includes some switch register functions and a few control characters. Users who are familiar with the operation of the DTOS switch register might want to use these functions to further research and document errors encountered by MDIAG.

The switches available and their functions are:

M - will display the current switch settings

sw 1
- 0 - loop on error
- 1 - do not loop on error (proceeds to next test)

sw 2
- 0 - console print
- 1 - no console print

sw 3
- 0 - do not display percent error
- 1 - display percent error

sw 5
- 0 - do not print on line printer
- 1 - print on line printer

sw 6
- 0 - do not halt on error
- 1 - halt on error (sends program to debugger)

sw 8
- 0 - error display only the first time a particular error occurs
- 1 - error display whenever an error is encountered during error looping

sw 9
- 0 - program will terminate after running all passes on all lines found
- 1 - program will rerun the tests an infinite number of times

sw 0 This switch is not for user entry. It is automatically set by the program to 1 if any other switch in ON; otherwise, it will be zero.

Control character functions are:

CNTRL R - restart program, switches maintained.
CNTRL D - restart program, switches re-initialized.
CNTRL O - send program to octal debugger.
CNTRL L - allows the user to enter a line number other than zero as the starting Mirage line number. CNTRL L will be recognized by the program only when it is accepting numeric input. As you will usually be restarting whenever the low line number is changed, the standard procedure would be to enter CNTRL R (or CNTRL D) followed by CNTRL L when asked to enter the device code.

ZETA

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