



Miniscribe 2012 10Mb
Full Height MFM Drive

DETECT v3 Utility

The Z-DOS v3 Utility that
Locates and Isolates New
Bad Sectors on Your
Z-100 Hard Drive!

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"Z-100 LifeLine"

DETECT v3 Utility

REFERENCES:

- MS-DOS Version 3 Software Manual
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- Digital Research CP/M-85 Winchester Supplement
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The DETECT utility examines your Winchester disk for any bad sectors (media imperfections) that have occurred since PREP was last used. DETECT then adds the addresses of these bad sectors that it finds to a list of bad sectors that had been recorded in the Reserved Winchester Area of the disk when PREP was run. This list is called the Bad Sector Table.

Note: For users who have older versions of the Winchester utilities, the DETECT program may be named VERIFY, but the operation should be similar.

Note: The bad sectors found by DETECT will not be locked out by MS-DOS until the partition has been formatted with the FORMAT command.

After using DETECT, reset and reboot your system by using a floppy disk or a partition not affected by DETECT. DETECT temporarily alters MS-DOS in memory each time it is used. Therefore, MS-DOS must be reloaded after DETECT is used.

BAD SECTORS AND HARD ERROR MESSAGES

Bad sectors are media imperfections that can cause hard errors during Winchester disk access operations. Hard errors are conditions under which an operation has failed after a number of repeated attempts. Recovery from a hard error usually brings an abrupt end to the operation that was being performed when the error occurred.

If you encounter hard errors that are caused by bad sectors, DETECT enables you to prevent the hard errors from recurring in the future. When you run DETECT, any bad sectors are added to the disk's bad sector table. After the affected partition(s) are reformatted, the bad sectors will no longer be accessed by the system. The maximum number of bad sectors in the bad sector table is 169. If more than 169 bad sectors are found, an error message will appear.

The bad sector table was initially prepared by the PREP utility, which initialized the Winchester disk and is the first of all hard drive utilities to be run on a new drive.

When you use FORMAT on a partition that has been examined by DETECT, FORMAT sets up sector boundaries to prevent further use of those bad sectors listed in the bad sector table.

When bad sectors are encountered during Winchester disk access operations, MS-DOS displays a hard error message that is slightly different from the floppy disk hard error message. The Winchester message appears in the form:

```
<type> error <action> drive <d>
Sector address of error is <nnnn>
Abort, Retry, Ignore?_
```

Where:

<type> indicates the type of problem that caused the error condition and can be any of the following:

```
Write Protect
SEEK
DATA
SECTOR NOT FOUND
WRITE FAULT
DISK
```

<action> identifies the operation that was being performed when the error occurred - whether the disk was reading or writing.

<d> is the drive name assigned to the partition in use at the time the error occurred; and

<nnnn> is the logical hexadecimal address of the sector on which the hard error occurred. Logical sector addresses begin with the first sector on the entire Winchester disk, which is sector 0000.

Whenever a hard error message appears, you need to record the sector address of the error, the partition name, and the operating system name of the partition on which the error occurred. With this information, you will be ready to respond to the utility prompts when you run DETECT.

OTHER CAUSES OF HARD ERRORS

Hard errors are not always caused by bad sectors. You might also obtain hard errors during Winchester disk access due to the following problems:

- * Excessive physical shock exerted on the disk drive unit (more than 5 G's for a period of time greater than 5 ms (milliseconds)),
- * Entry of foreign material (such as smoke) into the sealed Winchester disk chamber,
- * Malfunction of the Z-217 controller board, and/or
- * Temporary loss of power to the Winchester disk drive.

If one of these problems causes a hard error, the disk might not actually have any bad sectors for DETECT to find. In such a case, you should back up the files from your Winchester disk and run the PREP utility.

DETECT does not destroy any data stored on the Winchester disk. However, it is recommended that after running DETECT, you run BACKUP to copy all files from the partition(s) on which the bad sectors occurred, FORMAT the affected partition(s), and use RESTORE to replace the files on the partition.

INVOKING DETECT

To invoke DETECT, enter the command DETECT at the system prompt and press {RETURN}. If DETECT is not on the default disk and/or in the current directory precede the command name with the appropriate drive and/or path name. The screen displays:

```
DETECT version 2.00
Copyright (C) 1984, Zenith Data Systems
Corporation
```

The DETECT utility helps you to:

- * Locate sectors that have failed since you last ran PREP

```
Do you wish to proceed with DETECT (Y/N)? _
```

When this screen is displayed, you can choose either to end DETECT and exit to the operating system without examining any partition on the Winchester disk or you can continue DETECT.

If you want to abort DETECT at this point, press {N} at the prompt. (You can also press any key other than {Y}.) The system prompt will appear.

If you want to continue with DETECT, press {Y} at the prompt. DETECT then prompts:

```
Winchester drive unit number (0-3)? _
```

At this prompt, enter the unit number of the Winchester disk drive that you want DETECT to access. Up to four Winchester drives can be equipped, and they are identified by unit numbers 0-3.

At the Winchester drive unit prompt, enter the unit number of the drive you want DETECT to access. Most hardware systems are configured so that a single Winchester disk drive is drive unit 0.

After you have specified a valid unit number, DETECT prompts:

Enter bad sector address, or zero to end: _

At this prompt, enter either the correct hexadecimal address (nnnn) of a logical sector at which errors occurred or {0} to begin media verification. DETECT will not actually begin media verification until you enter a {0} at this prompt.

If you enter a bad sector address, DETECT will continue to display the prompt, ready for the next address. When you have finished entering the addresses of bad sectors, enter {0} at the prompt to begin the DETECT operation.

DETECT OPERATIONS

When you enter a {0} at the last DETECT prompt, DETECT begins to search for bad sectors on the Winchester disk. During this phase of operation (known as media verification), the screen displays:

Beginning verification...

When DETECT is finished verifying the disk, the screen displays:

Beginning verification...Completed

If no bad sectors were found, DETECT displays:

No bad sectors located.

You can assume that the hard errors you encountered were not due to bad sectors.

If DETECT found a reasonable number (from 1-169) of bad sectors during verification, DETECT displays:

Bad sectors located. Tables modified.

Note: The words "Tabled modified" will NOT appear in this message if DETECT is unsuccessful in appending the new bad sector information to the end of the bad sector table.

If DETECT found more than 169 bad sectors on the Winchester disk, the following message will appear at the end of the verification:

Bad sector count exceeded for this drive.

DETECT FOLLOWUP ACTIVITIES

After you use DETECT, the data stored on your Winchester disk will be intact, except for the data which was recorded over bad sectors. The bad sectors that DETECT found will not be made inaccessible until FORMAT is used on the partition(s) that contain the bad sectors. FORMAT will redefine the sector boundaries of the partition so that the bad sectors cannot be accessed.

To ensure the safety of the data you have stored on your Winchester disk, perform the following sequence of activities as soon as possible after running DETECT:

1. Reset your computer and reboot using a floppy disk or Winchester disk partition other than the one just verified. (No partition will be accessible until you do.)
2. Use BACKUP to copy all files from the verified partition(s) onto floppy disks.
3. After you have backed up your files, execute FORMAT once for each partition on which bad sectors occurred.
4. After formatting, use RESTORE to return all backed up files to their appropriate partition(s).

See your MS-DOS documentation for information on BACKUP, FORMAT, and RESTORE commands.

ERROR MESSAGES

Bad sector count exceeded for this drive.

Cause: This message appears when the upper bound limit of 169 bad sectors has been exceeded. This could indicate a hardware malfunction, particularly if it occurs relatively quickly. The problem may be failure of the drive, controller card or data separator board. Also, recheck all cable connections and try reseating the controller card in its S-100 socket.

Cure: If this message appears, run DETECT again. If the error still occurs, BACKUP the files from all the Winchester's partitions and run PREP. If the error recurs after PREP is run, try replacing the drive, controller, and/or data separator board.

Error - Can not read superblock A.

Cause: This message appears when a bad sector error has occurred in Superblock A in the Reserved Winchester Area.

Cure: This condition is self-correcting, in that if Superblock A is unusable, the backup copy of the superblock (Superblock B) will be used. It is advised, however, that you back up all files on the Winchester disk as soon as possible and then run PREP and PART again. Otherwise, if Superblock B becomes unreadable, all data on the Winchester disk will be inaccessible.

Error - Unable to read boot code from partition

Cause: This message appears when the boot code is not present on the specified partition or if the partition boot code has developed a bad sector.

Cure: When this message appears, boot up from another drive and run DETECT, BACKUP, FORMAT, and RESTORE on the affected partition. If the partition is completely inaccessible, you may need to run PREP.

Fatal Error - Can not read superblock B.

Cause: This message appears when a bad sector error has occurred in the backup copy of the superblock (Superblock B). Superblock A is also bad.

Cure: Run DETECT again. If the error recurs, you may have to run PREP.

Invalid HEX value, Try again:

Cause: This message appears when the bad sector address you entered was not a valid hexadecimal number or was out of the valid range of sector addresses.

Cure: Make certain you know the appropriate hexadecimal address and enter the correct value.

Track 0 contains bad sector(s).

Cause: This message appears when a bad sector error has occurred in the Reserved Winchester Area of the disk. This could indicate a hardware malfunction.

Cure: If this error occurs, check all cable connections and try reseating the controller card in its S-100 socket. Run DETECT again. If the error still occurs, attempt to BACKUP the files from all the Winchester's partitions and run PREP.

Unable to communicate with the Z-217 controller

Cause: This message appears when DETECT is unable to locate the Z-217 Winchester Controller. This could indicate that the controller board is not firmly plugged into the S-100 bus, that the drive cable connectors are not securely fastened, or that there is a hardware malfunction on the controller board.

Cure: If this message appears, make sure that the controller card and all cable connectors are secure, and run DETECT again. If the error still occurs, then run PREP.

I hope that you have found this information helpful. If you have any questions or comments, please email me at:
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Cheers,

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