

Very Important Information

You **MUST** take time to read through this **CRUCIAL OPERATING INFORMATION** or this program's test results will be erroneous and meaningless.

Welcome to TIP Version 2.1:

Version 2.1 of TIP offer several "incremental" improvements that did not warrant a jump to a version number of 3.0 (that's still to come.) Version 2.1 adds compatibility with the 250 Mb ZIP drive and with all USB Iomega drives. It also boasts an automatic self-repairing facility that allows TIP to reconstruct a cartridge's file system after being damaged by an obscure Windows 95/98 removable media bug.

TIP Version 2.0 Versus the Original 1.0 Release:

Version 2.0 of TIP is a **significant advancement** over 1.0. It far surpasses the earlier version's sensitivity to "soft errors" and provides, not only the original capability of helping users to detect drive misbehavior, but goes much further by empowering them to sensitively compare the integrity and reliability of drives and cartridges.

Be sure to see the "EXPLAIN RESULTS" page for detailed instruction in the interpretation of TIP's error results.

Background:

Iomega* Zip* and Jaz* drives cause '**Click Of Death**' by incorrectly writing to their removable media. This miswriting can damage the user's data, the factory-written low-level formatting, the head's positioning servo information, and the proprietary **Z-Tracks** that are used internally to manage and maintain the Zip and Jaz drive's cartridge data.

The clicking sound itself is nothing more than the sound of the heads being retracted from the cartridge into the drive then immediately reinserted. This deliberate strategy is employed by the drive when it is having trouble locating, reading, or writing any of the cartridge's data. This removal and reinsertion of the heads recalibrates the head positioning mechanism, 'scrubs' the heads to remove excessive oxide deposits, and eliminates any electrostatic charge build-up on the heads.

It is important for you to understand that the clicking sound itself is NOT the problem. The clicking is just an audible indication of a drive that is having trouble accessing the data on the cartridge.

Incidents of Click Death have been linked to bad external power supplies, loose power connectors, excessive magnetic oxide build-up on the drive's heads, magnetic and radio interference from nearby sources, media damage from excessive wear or mistreatment, and a seemingly endless array of internal electrical and mechanical problems from causes ranging from rough handling through defective original manufacturing.

Why is this happening all of a sudden?:

An unbiased appraisal of recent experience with the large population of Zip -- and to a lesser extent Jaz -- drives, leads to the inescapable -- and unfortunate -- conclusion that recently manufactured lomega products are experiencing a significantly higher incidence of problems -- both immediately after purchase and after relatively short term use in the field -- than the older versions of the Zip and Jaz drive products which established their reputation for quality and reliability.

The **lomega Zip and Jaz** section of my web site contains a **Q&A** area where I am logging many of my interactions with lomega's customers. Though these experiences are anecdotal in nature, upon reading them one gets the clear sense that something must have gone very wrong as lomega attempted to scale up their Zip and Jaz drive manufacturing in order to meet the huge demand for what were originally very reliable drives.

I have a lot of respect for the design of the Zip and Jaz drives. The personal computing industry **desperately needs a STANDARD** high-quality, high-capacity removable media solution -- rather than an industry fragmented by incompatible storage formats. lomega was the first with a really terrific solution, and has had the opportunity to unite the industry through the strength of the their products' design. But it remains to be seen, as many new competitors enter this marketplace, whether lomega will be able to cure what appear to be manufacturing quality-control problems, and hold the industry together with a single strong universal standard.

I sincerely hope they can!

About This Program:

I wrote the first version of **SpinRite** -- my well-known mass storage data recovery and maintenance utility -- more than eleven years ago. At the time of this writing, SpinRite is at version 5.0 and remains without peer in the industry. It was with those years of experience in mass storage maintenance that I set out to "**cure**" whatever the problem was with these newer lomega Zip and Jaz drives. But I soon learned, as you have seen above, that **there was no single cause for these problems** because so many different things were apparently going wrong with the lomega drives.

So instead, I decided to create two programs to address the PC user's need for reliable removable mass storage . . . while remaining with the lomega standard.

Program 1. This '**Trouble In Paradise**' freeware program is the first of the two. Since no one can 'cure' the problems which may afflict any Zip or Jaz drive without warning, the first step to assuring long data life is **early detection of the POTENTIAL for the problem.** For example, although we can't cure cancer, early detection of cancer's signs in our bodies allows us to take extra measures to assure our survival. Similar early detection of 'Click Death' is exactly what I've created here in Program 1.

Program 2. The second program, to follow this one, will be an inexpensive (but not free) tool allowing any lomega drive user to maintain and manage their entire collection of Zip and Jaz cartridges while individually monitoring each cartridge's condition and receiving early warning of impending trouble.

It will also be able to "field re-certify" your aging Zip and Jaz cartridges by providing FAR more sensitive defect testing than is provided by any other "generic" hard disk utilities. (Yes, including even our own SpinRite 5.0.)

Please see our web site at <http://grc.com> for news of the status of this second program . . . as well as for more extensive background information about this whole issue.

(You are also invited to join our **COD mailing list** to receive a short notice whenever something significant to Iomega Click Of Death occurs -- and to be informed when my next program (**Program 2**) is ready. To add yourself to this mailing list, please visit <http://grc.com/mail.htm>)

An Important Note About One Click Of Death Myth:

There has been widespread rumor that 'Click Of Death' acts as some sort of contagion, able to be spread from one drive to another by a 'contaminated' Click Of Death afflicted cartridge.

This actually can occur, but only in **extremely rare cases** of **massive physical damage** to the mylar disk spinning inside a Zip cartridge. In these very rare -- *but absolutely verified cases* - - the bent and torn mylar disk catches and 'beheads' any Zip drive attempting to load its heads into the cartridge.

Please see the Iomega pages of my web site for detailed discussions **and photos!** of this rare and bizarre occurrence.

However, for the most part, **Zip users should not be concerned** about the possibility of one troubled Zip drive somehow 'infecting' or destroying another one through a 'disease carrier' cartridge. **It can definitely happen** -- but then, you can also be struck by lightning in your sleep. So the possibility should not occupy too much of your waking concern.

What actually **does** happen -- which has created and maintained this unfortunate myth -- is that a Click Of Death drive **miswrites to its cartridge making it start clicking**. Then the worried user takes this cartridge to another drive and **that other drive also starts clicking!** But it does so only because it is now unable to read the damaged cartridge. **This does not mean that the second drive is now damaged!** Only the **cartridge** damaged by the first drive is in trouble. It is not the second drive's fault that it's unable to read the cartridge that was actually damaged by its use in the first drive.

What Is This 'Trouble In Paradise' Program?:

This 32-bit Windows freeware utility program, which I have named Trouble In Paradise (TIP), is a tightly monitored, non-destructive, data pattern surface tester. This program reads and writes every sector of data on the drive with surface and drive testing data patterns **while preserving all data originally contained on the cartridge**. Your data is preserved while allowing the function of the drive, and the data surfaces of the cartridge's disk(s), to be fully exercised under closely monitored conditions.

Even if this process wasn't being used to locate potential drive and cartridge troubles, running TIP upon your cartridges from time to time **will help to keep them in TIP top shape**. The process of reading, rewriting, and refreshing the data in every sector of the cartridge is **absolutely safe** and is good for them, since it allows any slowly developing trouble to be spotted and handled safely before the data becomes unreadable. (Note that the second

program in this series, mentioned above, will go much further in this direction, being specifically designed to support and monitor the long-term maintenance of your removable data cartridges.)

Amazingly, throughout the entire development of this program -- from the first moment that it began working -- **Not one single byte of data was ever damaged on any of my test cartridges!** *I believe that using TIP is extremely safe, and that you'll find TIP to be a useful tool to add to your personal computing experience.*

Please Note: Non-ATAPI Internal IDE Zip drives did NOT support the standard ATAPI / SCSI software interface, so this program can not operate upon those IDE ZIP drives at all. I really wish it could, but those drives conceal ALL special lomega information. TIP does operate upon ALL OTHER internal and external ZIP and Jaz drives.

How to Use This Program:

Please Note: The contents of any of this program's pages can be copied to the Windows' clipboard at any time by pressing the "Copy" button below. Graphical pages will be copied as images and scrolling text pages (like this one) will be copied as text. You can retain the text formatting by pasting the clipboard into the Windows Wordpad, or Word. If you wish to remove or ignore the formatting, paste into Notepad.

You are completely free to share and redistribute any of this information, but providing a link to our web site would be appreciated. <http://grc.com>

The trick for properly using TIP for diagnosing drive and/or cartridge problems lies in interpreting the results.

You'll find that TIP contains extensive result-driven explanations which you will automatically receive when any test run has concluded. But a bit of preparation and background is still necessary before you begin: . . .

In order for this program to find no problems, **both** the Zip drive **and** the Zip cartridge must be in perfect working condition. If either the drive or the cartridge is damaged **in any way** this very sensitive program will show you the trouble . . . but in many mild cases of trouble, TIP will be unable to determine **which** of the two components -- the drive or the cartridge -- is actually the source of the problems. This is the bit of detective work you'll need to pursue, aided by feedback from TIP.

One way to think of it is that with a drive that's known to be good, you can use TIP to test the condition of unknown cartridges. Or, with a cartridge that's known to be (initially) good, TIP can test a drive whose condition is unknown. Note that testing an initially good cartridge on a truly bad 'Click Of Death' drive can create damage on the cartridge, but I have deliberately designed TIP so that even in these cases your data will be safe, and you'll see this happening as the test runs so you can stop the test before the damage becomes extensive.

The 'detective work' is not really any big deal, since it only entails reading through the result analysis that will be presented after each test, and perhaps running the test again with the same or a different cartridge, or -- if possible -- finding another drive to test with the same cartridge . . . depending upon the outcome analysis.

Aided by TIP, if you're not sure whether the drive or cartridge is causing the trouble, changing one or the other -- and seeing what happens then -- will allow you to develop a much deeper feeling for what's going on within your system than you've ever been able to get before. And

you'll find that after a few experiences you'll get the hang of it and will be able to accurately judge what's happening from the way the test runs.

Thank you very much for taking the time to read through all this material! . . . I know you're probably anxious to get to it, but you needed to first be equipped with the essence of what I've learned through my research into these confusing, troubling, but very important issues. Also, don't forget my web site, since it will always contain more recent information, data, and experience than can be packaged into a static computer program such as this.

So . . . with **ALL** of that said, please insert a cartridge into whichever Iomega drive you want to use and proceed to the **Next** panel . . .

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