

*Get serious. Dive for data the right way.*



## 3D Data Recovery Phases & Issues

### **Know the terrain: a professional approach to data recovery – discovered by DeepSpar Data Recovery Systems**

*The three "Ds" in data recovery (DR) correspond to the three phases that DeepSpar discovered for true, deep recovery of maximum files on a client's drive. This professional approach pairs an industry-leading case recovery methodology with a professional data recovery toolset to drive dramatically improved recovery rates.*

Most data recovery firms have a handful of tools and techniques that roughly correspond to the three phases below, but DeepSpar is the first company to address the needs of all three with methodology, technology, and business solutions.

**The result: more power; more control; more data.**

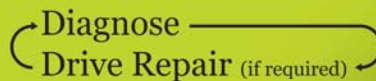
*In an industry where everyone keeps secrets and tries to protect research and development, DeepSpar has a totally different approach: they share knowledge.*

*Imran Nino Eskic,  
DR Engineer,  
Zagreb, Croatia*

### 3D Data Recovery

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#### Drive Restoration



**Phase 1:** Diagnosis & repair of drives that are not responding, or that appear functional but produce useless data.

**Recommended for Phase 1:**  
The PDR Workflow™  
The PDR Toolset™

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#### Disk Imaging

**Phase 2:** Creation of a clean duplicate of disk on a new disk to serve as a stable platform for Phase 3.

**Recommended for Phase 2:**  
The PDR Workflow™  
The PDR Toolset™

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#### Data Retrieval

File System Recovery  
File Verification  
File Repair (if required)

**Phase 3:** Rebuilding the file system and extracting user data, then verifying the integrity of files and repairing those that are faulty.

**Recommended for Phase 3:**  
The PDR Workflow™  
The PDR Toolset™

## 3D Data Recovery

*“With the DeepSpar team on your side, you can draw on a free flow of ideas and their extensive experience to optimize your techniques and advance your business.*

*Jeffrey Sassinsky  
President,  
Sassinsky Data  
Services LLC,  
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### Phase 1: Drive Restoration

This phase deals with drives that are not responding, and drives that appear functional and can be imaged, but produce useless data.

The solution is to diagnose the drive for damage and make repairs as necessary.

DeepSpar recommends **The PDR Workflow™ and, from The PDR Toolset™, PC-3000 Drive Restoration System** by ACE Laboratory Russia, which can identify damage using diagnostics, reporting, and specialized utilities. If the drive has damage, it should be fixed before moving on.

There are three main types of damage:

**Physical/mechanical damage:** Failed heads and other physical problems are often repaired by replacing the damaged hardware with a donor part. PC-3000 can help to identify mechanical problems.

**Electronic problems:** Failed printed circuit boards (PCBs) are replaced with donor PCBs, and the contents of failed PCB read-only memory (ROM) are copied to the donor using PC-3000. If required the drive may also need to be recalibrated to work with a new PCB using PC-3000.

**Firmware failure:** Firmware failures are diagnosed and fixed at the drive level using PC-3000.

A repaired drive should be diagnosed again, in case the repairs uncover further problems that couldn't be identified before.

This phase is complete when a drive is functional and able to communicate with a computer's basic input/output system (BIOS).

### Phase 2: Disk Imaging

This phase deals with drives that have read instability problems or are in danger of failure. We recommend **The PDR Workflow™ and, from The PDR Toolset™, DeepSpar Disk Imager**, rather than traditional disk imaging methods, because it uses lighter, faster operations to minimize disk degradation, even when reading bad sectors.

In this phase, the contents of the repaired drive are read and copied to another disk using DeepSpar Disk Imager. Disk imaging prevents further data loss caused by working with an unstable drive during the subsequent data retrieval phase.

DeepSpar Disk Imager 3 can also work with slightly degraded drives, so part replacement is often not required. In these cases, the data recovery process can skip drive restoration and start with disk imaging.

### Phase 3: Data Retrieval

In this phase, original files that were copied to the image drive are retrieved using **The PDR Workflow™ and, from The PDR Toolset™, PC-3000 Data Extractor** by ACE Laboratory Russia.

Data retrieval can involve these tasks:

**File system recovery:** Corrupted file system structures such as corrupted directories or boot sectors are rebuilt using PC-3000 Data Extractor.

**File verification:** Recovered files are tested for potential corruption. DeepSpar provides a file verification tool and generates a report that can be delivered to the client.

**File repair:** If necessary, corrupted files are repaired if data could not be fully restored in previous phases, or if corruption has occurred because of partial restoration, disk imaging is repeated to retrieve more sectors.

Once the data is repaired and accessible, you can supply the client with a new drive and data, or transfer the requested files to another system.

*The 3D Data Recovery phases work systematically from drive to disk to data, taking advantage of all possibilities for extracting usable files. Only The PDR Workflow™ and The PDR Toolset™ technology like PC-3000 and DeepSpar Disk Imager enable data recovery firms to properly complete all three phases.*

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