

Vendors have warned their customers not to clean disc packs, with good reason, but new techniques may eliminate the risk of damage

Disc Packs: The Cleaning Debate

by Joseph M. Ludka

Almost since its inception, the removable disc pack has been accorded a unique, but unenviable position in the computer room. . . . it is about the only product in regular use which does not enjoy the benefits of a preventive maintenance program. At a time when 7 to 10% of the annual dp budget goes for maintenance, the disc pack is completely ignored. The anomaly of this situation is that the entire installation is dedicated to generating, processing and storing data in machine-recognizable form, yet little if any concern is shown for its expensive end product, data, which is stored on the pack.

Data processing management has been involved in the "To clean or not to clean" controversy for several years. "Should we clean our packs, or have them cleaned? And if they are cleaned, what benefits will result?"

"Is there a risk involved in cleaning packs? Can packs be harmed by cleaning? Will data stored on packs be affected or damaged by cleaning?"

"What do disc pack and disc drive manufacturers have to say about cleaning packs, and why?"

Nearly all pack and drive manufacturers are agreed that they do not want the customer to clean his packs. They have so advised their customers, when asked. But during repeated tellings, the statement has been inadvertently twisted, until the customer is now often advised that, not only should he not clean his packs, but that packs do not need cleaning. Whether a customer is told not to clean his packs, or that they do not require cleaning, the end result is the same: he keeps away from his packs.

The position of pack and drive man-

ufacturers regarding customer pack cleaning is understandable. The manufacturers have known from the start that pack cleaning, when performed by someone not thoroughly trained in proper cleaning procedures, often does more harm than good. They feel that tongue depressors, tissues and alcohol bottles are potential lethal weapons when put in the wrong hands. In short, the evils of contaminated packs are less than those of damaged disc packs.

Manual pack cleaning also has not proven to be particularly effective. A contamination-caused data check can sometimes be removed, albeit temporarily, by manual cleaning, which is good. However, there is an equal chance that the contaminants will be spread over a wider area, compounding the problem, or worse yet, discs can be bent while the tongue depressor is being inserted between the surfaces, with catastrophic damage resulting to pack, drive and data. Is there any wonder then that manufacturers advise their customers not to clean packs?

In actual practice, whenever re-tries, reassignments, read-write errors and data checks are experienced, the customer engineer attacks the problem, armed with the self-same tongue depressors, swabs, tissues and alcohol bottles. His number one rule is to try to alleviate the problem by cleaning the pack. His actions are completely contrary to his earlier statement that packs should not be cleaned, or do not require cleaning.

The logical conclusion is that disc pack and disc drive performance is definitely enhanced by cleaning, but that manual cleaning is far from satisfactory, even when done by trained

personnel, and potentially disastrous when performed by untrained people.

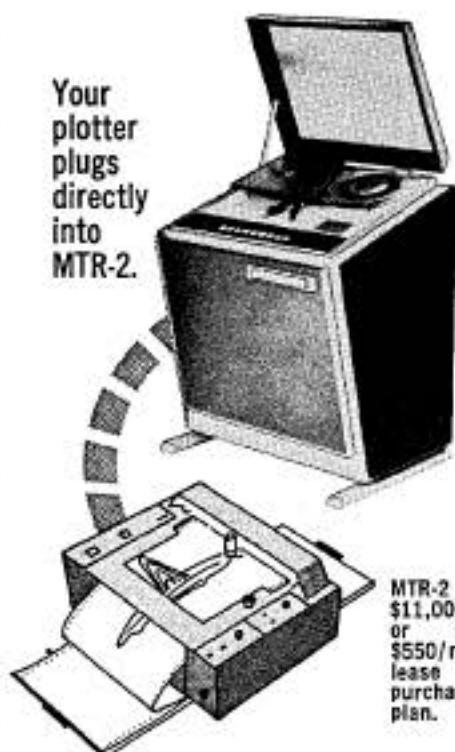
On the positive side, computer industry history reveals that periodic cleaning of magnetic tape, a sister storage device, has long been recognized as beneficial. However, it was not always so. Tape cleaning proponents fought long and hard to achieve their current respected status. Their most important asset was a cleaning device which was completely automatic, which cleaned tape with a minimum of human involvement. The automatic tape cleaner eliminated the swab jockeys from the scene.

Similarly, disc pack cleaning has become far more sophisticated since its introduction in 1969. The user now has available devices which are completely automatic in all functions. The operator has only to mount the pack, as he does on a standard disc drive, and touch a button. Nothing is left to chance. The automatic cleaner will remove virtually every bit of contamination from the pack, but will not damage the stored information, so it need not be removed before cleaning. In fact, an automatic cleaner is most dramatic and beneficial at times when a pack will not run because of a contamination problem. Cleaning will generally restore the pack to perfect operating condition, enabling the user to recover data. Consider some actual case histories:

Lou Gaghan, operations supervisor at Continental Airlines in Los Angeles, had a 2316 type pack which had been delivered to Continental with three factory-flagged tracks. Alternate tracks were assigned at the factory. In the first two years Continental used the

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Disc Packs:

pack, it developed six additional bad tracks, and alternates were assigned. Subsequently one of the alternate tracks also went bad, and a seventh alternate was assigned, bringing the total of re-assigned tracks on the pack to ten.

The pack was cleaned on an automatic pack cleaner, then was re-initialized and proved to be error-free. Cleaning had removed not only the seven contamination-caused flagged tracks, but had also removed the original three factory-flagged tracks. It was re-installed in the system, and more than a half year later was still performing perfectly.

Berry Bearing Co. of Chicago had four or five packs sitting around gathering dust because dp manager Gene Lewis found them unreliable. After automatic cleaning, they were re-installed in the system and are working perfectly.

Val Decker of Interstate Restaurant Supply in Los Angeles reported that Interstate eliminated about 95% of their re-tries through automatic pack cleaning. Read-write errors and data checks have been almost nonexistent since the pack cleaning program was instituted.

Fasco Industries in Rochester, N.Y., had an interesting experience. Manager Tony Mineo reports that they had three packs cleaned in a test demonstration. The packs selected were worst-case packs. Two had been removed from service because of recurrent data checks and resulting unreliability, and the third could not be brought up for a job over the preceding week end. The packs were cleaned, the pack which would not come up ran perfectly, and the job was completed without incident. The other two were reinitialized and put back into service, and have been performing reliably since.

At Marine Midland Services Corp., Syracuse, N.Y., some unusual disc problems occurred. Marine Midland was in the process of changing pack suppliers. New packs were initialized and then data was transferred from the packs being replaced. Because of new packs used, errors encountered were quite surprising. All packs were then cleaned on an automatic cleaner and found to perform much more efficiently. Readability on both new and old packs improved 85% with the automatic cleaning.

Last spring, Corning Glass Works in Corning, N.Y., was flooded. Their disc packs were under eight feet of muddy water for close to 48 hours and were completely caked with mud after re-

covery. They were brought to Marine Midland's Syracuse computer center and cleaned on an automatic cleaner. As a result, over 80% of the information was recoverable.

Jim Renze, manager of the unit test department at disc drive maker Marshall Data Systems in Torrance, Calif., credits automatic pack cleaning with elimination of nagging problems due to dirty packs.

At Xerox in Rochester, N.Y., manager George Schmutz had a 2316-type pack which he could not use because of frequent data checks. He said that he would become a believer in automatic pack cleaning if this pack could be restored to reliable operating condition. The pack was cleaned, re-installed, and is performing perfectly.

The immediate benefits of automatic pack cleaning, as detailed here, are readily apparent. There are also numerous continuous long-range benefits accruing, such as improved total system performance, elimination of down time because of data checks, elimination of delays for alternate track seeks, and elimination of the costly replacement of packs which "suddenly" go bad.

Automatic disc pack cleaning has progressed rapidly, and a user now may purchase or lease his own cleaner, or subscribe to competent cleaning services, where qualified people, equipped with automatic equipment, come into the user's facility to clean his packs as required. It remains for the user to sample the benefits of automatic disc pack cleaning, and perhaps to discover that many problems that have been diagnosed as technical may, in reality, be nothing more than contamination buildup on his packs. The computer industry appears finally to have found an effective way to provide preventive maintenance for its most important product, data. □



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