THE SECRETS OF HOME TAPE BAKING

by Jonathan Stars

About four years ago, I pulled one of my 20-year-old reel-to-reel tapes off the shelf to do a remix. As it played, I was surprised at the loss of high end, which got noticeably worse during the course of the three-minute song. I cleaned the heads, and was shocked to find the cotton swab covered in what looked like pepper (see Figure 1). Scared s**tless of ruining the only documentation I had of these ancient sessions, I decided to do what any reasonable remixer would do: Take an 8-input interface, and transfer the eight tracks from my tape into the computer in one pass. But as I started the transfers, it seemed I could only play about one minute of any song before I had to stop and clean the tape heads. Otherwise, I could actually see the onscreen waveform grow weaker.

It wasn't too hard to take the one-minute slices of audio, and combine them back into a whole song, but it was tedious. If you don't match up the waveforms just right, you risk getting a click where the audio pieces connect. And a 20-minute tape requires 20 head cleanings. With hundreds of tapes, just the thought of it made me want to take a nap. But what else could I do?

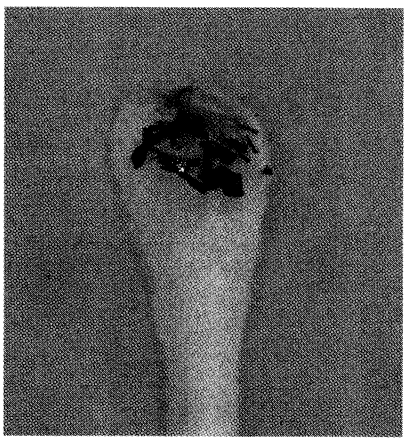

Fig. 1: Tape sheddings on the end of a Q-tip.

A QUICK EXPERIMENT

I knew about tape baking from an article I read about a convection oven method used by the engineers at Ampex, but I certainly couldn't afford to rent time on one of those babies—let alone buy one. I also read about a method using a plate warmer—something apparently used in high-class European households—but, then again, those units are a bit expensive.

Fortunately, a friend told me about a food dehydrator he had been using to bake his tapes. I had my doubts, but I was willing to give it a try. Following his instructions, I put the tapes on the shelves of the dehydrator, set the machine to 120–135 degrees for two hours, and made sure to turn the tapes every half hour. Afterwards, I let them cool for two hours before playing them.

As I was skeptical about this process, I conducted this experiment with some tapes I didn't care much about. Before baking, I verified that the tape stuck to the heads of my machine, and that the audio sounded terrible within the course of a few minutes. After the four-hour-long process, I slapped it back on the machine. It sounded great! Not only that, but after playing the tape throughout the entire reel, the heads were still clean.

WHAT'S GOING ON?

It's called sticky shed syndrome. Your tapes are made of iron oxide, and a backing. The iron oxide is mixed with glue that makes it stick to the backing. It turns out that, over time, the glue absorbs moisture and gets gooey.

There are many variations of how this might affect your precious tapes. I had nearly every symptom there is. Some tapes turned gummy, and I could see shiny, sticky patches on the surface. As

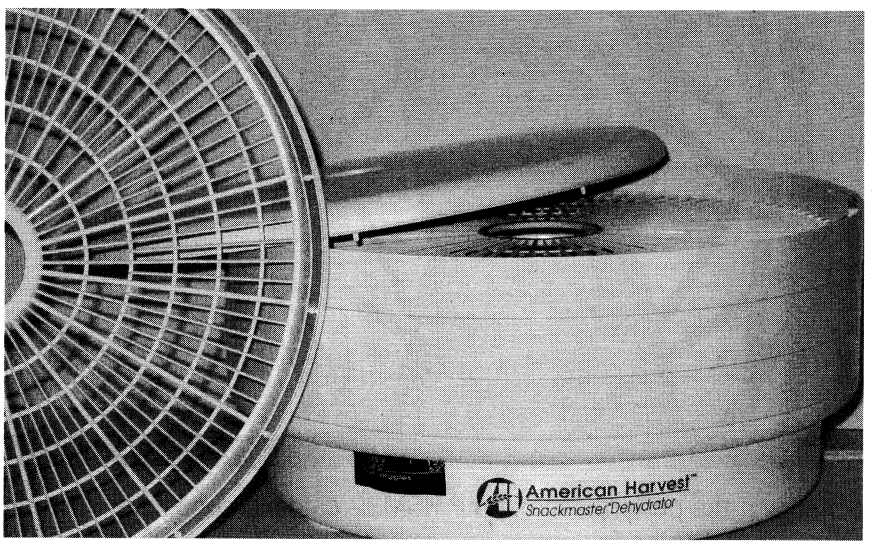

Fig. 2: The Nesco American Harvest Snackmaster Pro FD-50 Food Dehydrator. Note the adjustable black wheel.

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the tapes ran, I could hear snapping and popping as the gooey stuff would release from layer to layer. Other tapes would fast-forward or rewind at such insane speeds, I thought my machine was broken. With other tapes, I could hear a high-pitched screech as the tapes went across the heads. The worst symptom was when bits of the tape got stuck to the heads (and anything else the tape touched along the path between the reels), and literally peeled off—sometimes, in little flakes, and, sometimes, in string-like shavings up to an inch long.

WHAT YOU NEED

The machine I recommend is the Nesco American Harvest Snackmaster Pro FD-50 Food Dehydrator. It costs $80, and can be ordered from www.nesco.com. There are also lots of used ones on eBay, if you want to take that route. Because the sellers use slightly different names, you need to know that it's 220 volts and 500 watts. It should have four trays, and an adjustable thermostat—which consists of a black wheel near the bottom of the unit that goes from 90 to 145 degrees (see Figure 2).

> Watch out for tapes with splices. They tend to break, and heating makes it worse.

American Harvest also sells a 1000-watt unit, and you might think you can process more tapes that way, but I have some concern about the magnetic field a larger motor might produce. As it is, I don't use the bottom tray—just in case the motor might affect my tape. The Snackmaster is expandable to 12 trays, but I'm not convinced the same amount of heat can process a larger number of tapes.

Seven-inch reels will not fit in these machines, but you can customize the units to suit your needs. In the center of each plastic tray is a crown-shaped piece that sticks up to support the trays above. You can use some wire cutters to snip it out. I used a rotary tool, and got very nice results. Then, I filed down

the edges. It leaves behind some plastic dust, which you should vacuum off the tray. Even then, you might work the surface over with some adhesive tape, as static electricity could hold some of the flakes behind.

RULES TO LIVE BY

• Don't run the machine with the translucent fruit roll sheet inside. You want the warm air to circulate.

• Any time you move the dehydrator, check the thermostat, because the knob rotates pretty easily. You don't want to melt your musical babies.

• Don't try to use your kitchen oven for this job. The thermostats aren't that accurate, and they don't move the air around enough to evenly heat the tapes.

• Don't bake acetate tapes. Trust me.

• Watch out for tapes with splices. Old splices have a tendency to break any way, but the heating seems to make it worse. Just keep your eye on them when you play and rewind.

• Clean your heads often.

• Rotate the trays and tapes. The lower trays get a little warmer than the upper ones. So every half hour, move the top tray to the bottom, and the bottom tray moves up one. Flip the tapes over, and even turn the reels so that the part that is near the center of the tray moves about a quarter turn away from the center.

DETAILS, DETAILS . . .

True restoration experts may recommend that you slow wind the tapes onto metal reels before baking. I didn't do that because I was worried about causing further destruction to the tapes. All I can say is I've baked more than 300 tapes—most of them on plastic reels—and I continue to be thrilled with the results. (If you have tapes stored tails out, it's not necessary to rewind them before transfer. In the digital domain, you can play the tapes backward, and reverse the audio once it's in the computer.)

I let the tapes cool by laying them on top of empty plastic yogurt cups. It seems to me that as they cool, the moisture and temperature should have a chance to completely escape. Although all my tapes have been 1/4" and 1/2", you can make the machine work with wider tape. You'll have to make one of the trays into a spacer by cutting the webbing away from the outer ring. (American Harvest also sells a Convert-A-Tray that lets you take the web out.) Then, you put the tape on the tray below, and use your new spacer to support the next tray up or the lid of the machine. When working with wider tape, I would suggest increasing the heating and drying times. Try adding an hour for 1" tapes and two hours for 2" tapes. If the tape still has problems playing, try baking it a second time.

So now that you know the cheap-and-easy story, you don't have any more excuses for not getting started on your transfer project right away. And you can offer your tape restoration services to others, as well. Just don't tell them how inexpensive the "special equipment" is. We'll keep that secret between us. EQ