

Collections Research News

Spring 2001

COLLECTIONS KORNER

(Collections Korner is a regular feature of *Collections Research News*. If there is any topic you would like to see covered in the future, give us a call or drop us a line.)

Care and Feeding of Magnetic Tape: Problem Child or Piece of Cake?

More and more museums are finding themselves custodians of modern technology in the form of audio and video tapes. Being good custodians of this material can be a daunting task unless your staff is prepared to deal with it. The best preparation is information.

What exactly are we talking about when we talk about audio and video tape? Both audio and video tapes hold information in the form of sounds and/or images represented in a pattern of magnetic particles affixed to a thin ribbon-like structure. This ribbon-like structure is composed of several layers of material: a base of stable polyester (polyester terephthalate), a binder layer (usually polyurethane) in which the magnetic metal particles are embedded and an optional anti-static backing of carbon black in either polyethylene or polypropylene. Within the binder layer, in addition to the magnetic particles, there is a lubricant to help the tape pass cleanly through the recording/playback machinery. There can also be additional additives such as plasticizers or residual solvents from the manufacturing process. The strength and make-up of the magnetic particles can vary by manufacturer and tape type. Both analog and digital audio and video tapes are composed of this same structure. The difference between these tapes is the manner in which the information is recorded in the magnetic particles.

So what do we need to do to be good custodians of magnetic tape? First, one needs to be aware of the fact that in order for the tape to be of use it must be accessible, and to be accessible it must be capable of being played. Two things are needed for accessibility: a physically sound tape and a piece of machinery on which to play it. Therefore, it is vitally important for any museum which holds magnetic tape in its collection to also collect the machinery needed to play the tapes and keep that machinery in good running order. This may involve having a selection of spare parts and manuals for the machines as well as the software, machines and manuals needed to access digital recordings. Second, one needs to be aware that even under the best conditions possible magnetic

WHAT'S NEW AT CRM

In November, 2000, at the second annual meeting of the International Foundation for Cultural Property Protection in Denver, CO, our principle received her certification as an Institutional Protection Specialist. This adds the important dimension of physical security to her collections management skills. The three-day meeting consisted of sessions on various aspects of security and property protection including fire protection, security systems, employment screening and responding to terrorist threats. For more information regarding the IFCPP contact Robert Layne, Executive Director, at 1285 Hudson St, Denver, CO 80220, phone 303-322-9667, email rob@ifcpp.com or visit their web site at www.ifcpp.com.

FILEMAKER® PRO CATALOGING TEMPLATES NOW AVAILABLE FROM CRM

Collections Research for Museums has created a collection database using the commercial software FileMaker® Pro. Cataloging templates are available for object collections, photographic collections and archival collections. We will customize a cataloging screen for those of you who have specialized collections. We can also connect your database to an imaging system to allow photographs of the collection to be incorporated into the database. This is an opportunity for small museums to computerize their collection records using a very user friendly database software. Contact us for details and pricing.

(cont. from Pg 1)

tapes have a life span of only 10-20 years, much less than the expected life of paper and film.

As with much of a museum's collection, the environment in which magnetic tapes are stored is crucial to their preservation. There are several factors that contribute to the destruction of magnetic tape. Controlling the temperature and humidity of the storage and use areas is critical to the stability of magnetic tape. Too much humidity will cause the binder layer to absorb water in a process called hydrolysis. This will cause the binder to become sticky and can result in the separation of the binder from the base, making it impossible to play the tape without damage to the tape and the playback machine. Moisture absorbed into the tape also causes expansion and distortion of the backing which increases the chances of permanent dropouts of the audio/visual signal. High humidity also increases the chance for fungal growth in the binder. High temperatures accelerate these processes. Long term exposure to temperatures above 74° F (23° C) increase tape pack tightness, which can cause the layers of tape to stick together or small particles of debris to become imbedded in the binder, affecting not only that spot but several layers of tape before and after with impressions from the debris. Extreme variations in both temperature and humidity can cause the tape to shrink and expand which can result in permanent deformation, making the tape unreadable. Dirt, dust, fingerprints, food, smoke and airborne pollutants can also harm magnetic tape by settling on the surface of the tape and thus creating spaces between the tape and the playback head which result in dropout of the audio or video signal. Even minute particles can cause dropout of the signal because of the very tight tolerance needed between the tape and the playback head.

An even wind is also critical to preservation of magnetic tapes. Uneven stresses in the tape pack can cause a variety of problems from edge damage in areas where individual strands or blocks of tape are raised above the tape pack to adhesion or distortion of tape layers in areas that are wound extremely tight to slipping of the tape block in areas of loosely wound tape. Therefore, before a tape is played or stored be sure to fast forward and rewind on the machine to be used to play it in order to achieve an evenly wound tape pack.

In addition, frequent use, mishandling, unlabeled tapes, insertion and ejection from machinery, strong magnetic fields, shock from dropping, dirty machinery and accidental erasure are all factors that will shorten the life of magnetic tape.

So what do we do? Store magnetic tapes in a clean and stable environment with a temperature of 40° F to 70° F and relative humidity (RH) of 20% to 30%. Store tapes vertically in good quality containers and return tapes to their containers when not in use. Always clearly label tapes and break off the record tab to prevent accidental erasure. Keep playback equipment clean and in good repair. Clean machines regularly and thoroughly. Never eject a tape in the middle of an important recording and do not use scratched or damaged tapes. To eliminate deterioration from overuse, do not regularly access original tapes. Make backup copies for safe keeping and for use. Keep masters and duplication masters in a clean and climate controlled area separate from that in which use copies are kept. Archival (long term) tape storage should have a temperature of 40° F to 68° F with a humidity of 20% to 30%, with no more than 4° variance in temperature or 10% variance in RH. The use environment should be between 68° F and 74° F with a RH of less than 45%. Be careful to allow any tape moved from long term storage to acclimatize for several hours before playing.

Practice careful handling procedures and do not touch the tape directly with bare hands. When threading a reel tape onto a machine, wear lint-free cotton gloves. Do not drop tapes or place on or near magnets or machinery that produce strong magnetic fields. Close proximity to strong magnetic fields can realign the magnetic particles in the tape, effectively erasing it.

Even with the proper environment magnetic tapes need to be monitored for deterioration periodically and you may have to migrate your recordings to new tape stock to prevent loss. The quality of the original tape stock is an important factor in how long your tapes will last. Obsolete formats, inherent vice, obsolete machinery and the importance of the recording are major factors to consider when assessing the need for a program of reformatting and/or copying to a newer tape stock or format.

There are many resources out there for museums who find themselves caring for collections of magnetic tape. If you have such collections, one of

the best things you can do is utilize these resources

and become as well informed as you can. Some sources to get you started are: National Parks Service, Conserve-O-Gram numbers 19/10, 19/11, 19/18 and 19/20; *Magnetic Tape Storage and Handling: A Guide for Libraries and Archives*, John Van Bogart, <http://www.clir.org/pubs/reports/pub54>; *The Dos and Don'ts of Video Tape Care and Videotape Preservation* by Jim Wheeler; *The Video History Project: Resources @* <http://www.experimentalvcenter.org/history/preservation>; *Caring for Your Home Videotape*, AIC, <http://aic.stanford.edu/treasure/video.html>; *Video Tapes*, Alan Calmes, in *Storage of Natural History Collections: A Preventive Conservation Approach*, Rose et al, editors, SPNHC.

SERVICES

Collections Research for Museums can now **assist small museums with computerizing their collection documentation** using off-the-shelf database software. Our current specialty is FileMaker® Pro databases (see article on Pg 1). For more information, give us a call at (303) 757-7962.

In addition, Collections Research for Museums offers **classes for small museums in Cataloging and Collections Management**. If you would like more information on topics covered and costs, give us a call at (303) 757-7962 or drop us a line.

We also offer a variety of **other services** to museums, large and small. These **range from simple inventories to complete and thorough cataloging of collections**. Feel free to contact us for more information. We provide a **free initial consultation**.

Also, if you need help preparing your NAGPRA summaries or inventories, we can help. Give us a call.

(*Collections Research News* is a service of Collections Research for Museums, Inc, 4830 E Kansas Dr, Denver, CO 80246 (303)757-7962, email: schaller@rmi.net. Questions, comments or story suggestions are always welcome.)