



Community Archiving Workshop

## **Webinar 2: Inspection and Inventory**

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Southwest Region IMLS + NEH Cohorts

# Inspection and Inventory

April 28, 2021

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A detailed inventory of a thoroughly inspected audiovisual collection is a key component in preservation planning. Inspection and inventory helps you identify the greatest physical risks in your collection, some of the most valuable content, and allows you to begin to prioritize your collection for digitization. In this session, participants learn the how and why of creating a simple inventory for their collections even without a cataloging system.

#cawesome

Today we are going to practice inspecting media and creating an inventory, as well as learn to identify magnetic media formats and their risk factors. A detailed inventory of a thoroughly inspected audiovisual collection is a key component in preservation planning. It can help you identify the greatest physical risks in your collection, some of the most valuable content, and allows you to begin to prioritize assets in your collection for digitization. By conducting an inspection and creating an inventory, you will gain greater physical and intellectual control of your collection.

# Why Inventory?



To know what you have and where it is.

Assess the condition of the collection.

Create data about the collection that supports preservation planning, storage planning, and budgeting.

Object ID <small>check the Open World list of available numbers</small>	Alt / alternate catalog number or other numbering system	Medium	Format	number of assets	Title	Title Type	Location Number
2015.0082		film	- Film: 16mm	-	John J. Hooker	annotated title	AD0001
2015.0083		film	- Film: 16mm	-	John J. Hooker	annotated title	AD0002
2015.0086		film	- Film: 16mm	-	Stadigrau - Excerpts from Campaign Film	annotated title	AD0003
2015.0084		film	- Film: 16mm	-	U.S.S. Nashville	annotated title	AD0004
2015.0085		film	- Film: 16mm	-	Experiments in Hope	annotated title	AD0005
2015.0087		film	- Film: 16mm	-	Slughterhouse	annotated title	AD0006

That is archivist speak for:

Knowing what you have and where it is.

Assessing the physical condition of the recordings in your collection.

Creating data through the inventory, which allows you to plan for preservation.

Importantly, it will also give you a rough estimate of how many hours of media you might be considering and what sorts of digital storage will be needed once preservation digitization is underway.

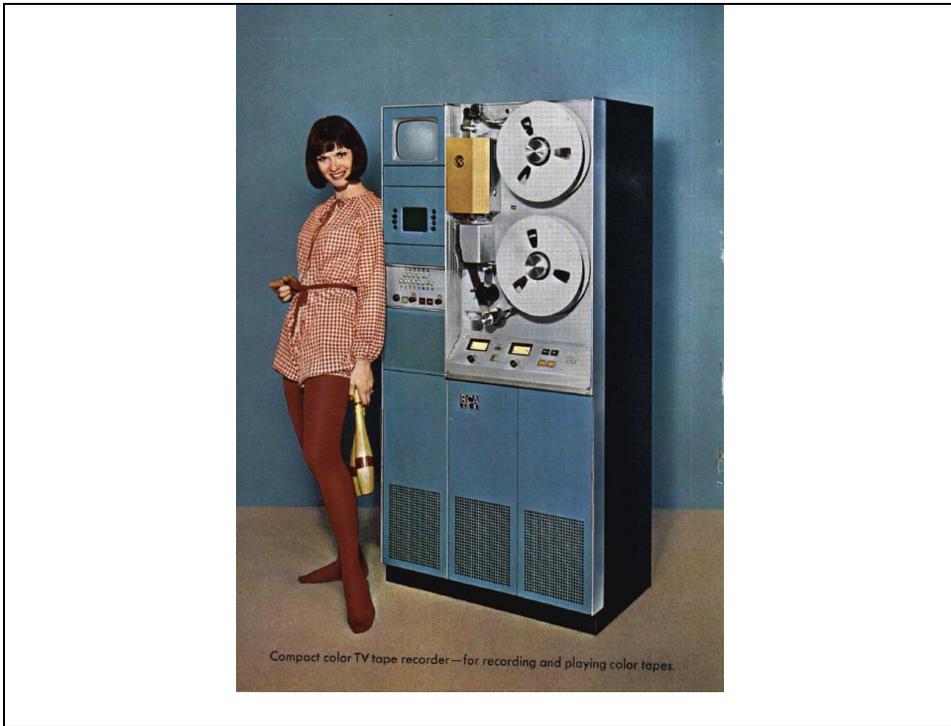


## 2. Magnetic Media

Magnetic media late 1950s - late 2000s



Magnetic tape is a way to capture audio and visual time based information. It was in wide distribution from the 1950s through the early 2000s. Magnetic tape is stored either on a reel of tape, or in a cassette, which is really just two reels enclosed inside a carrier.



Early video formats were not in a cassette- they were on reels (like film) like this 2” open reel video here. The equipment and the reels of tape were very large and expensive.



These early formats were used by government, for tv broadcast, and professional commercial use.



In the 1960s, tape formats became smaller, portable and less expensive and were adopted for home use, like this half-inch open reel format.



Shigeko Kubota in her studio. © Tom Haar, 1972.

Amateur filmmakers, experimental filmmakers, documentary makers, and media activists often used these more accessible video formats, similar to the way smaller gauge film was more accessible and became widely used.  
<https://www.artsy.net/article/artsy-editorial-shigeko-kubota-pioneered-video-personal-medium>

## Tape formats 1969- 2000

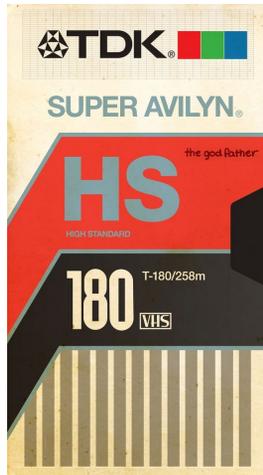
Rarely used any more. Relatively short lifespan.



However, there are many formats of magnetic media! This is because the competitive commercial nature, in which magnetic media evolved, led to the development of many competing formats, which were continually abandoned as new technology emerged. This means that there are many recordings out there on formats like you see here, but fewer and fewer machines to play them on.

A really great resource, if you're ever struggling to identify a videotape, is the [Videotape Identification and Assessment Guide](#), which was produced by the Texas Commission on the Arts in 2004. I will upload this guide as a resource to our Toolkit, with the recording of today's webinar.

Common Video Cassette formats include  
VHS and 3/4" U-matic

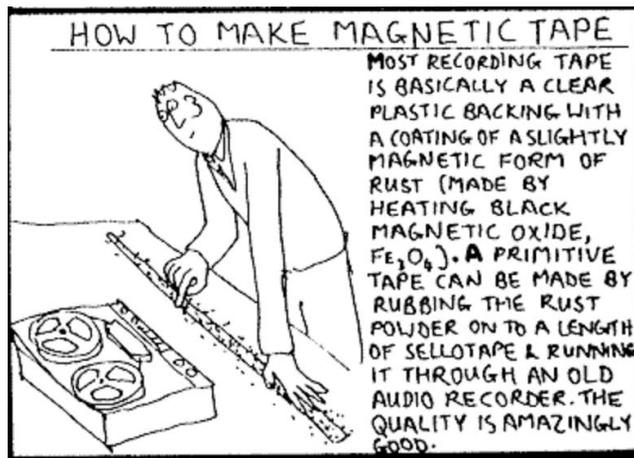


Fortunately, most video formats are easy to identify, because the name of the format is on the tape, or the case.

## Kits contain a variety of magnetic media formats



We put a few different magnetic media samples into your kit for us to practice working with.

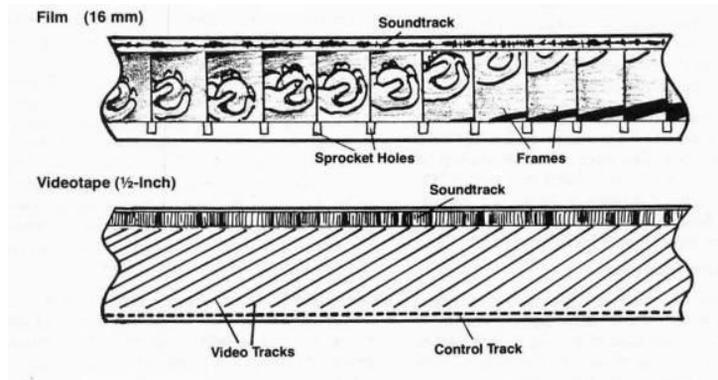


[https://www.secretlifeofmachines.com/secret\\_life\\_of\\_the\\_video.shtml](https://www.secretlifeofmachines.com/secret_life_of_the_video.shtml)

One of the biggest differences between film and magnetic media is that magnetic media is not photochemical-- you can't see the information with your eye. It is oxide on a plastic base. This means you need a machine to see the images and play it back. Photo credit: the secret life of machines

[https://www.exploratorium.edu/ronh/SLOM/0205-The\\_Video\\_Recorder.html](https://www.exploratorium.edu/ronh/SLOM/0205-The_Video_Recorder.html)

# Information on videotape



**Video signal - Audio signal - Control track**

Even though you can't see them with the naked eye, much like film, videotape carries three elements: a video signal, audio signals, and a control track to keep the two synced.



Magnetic media captures the image using electronic pulses which can only be perceived using playback equipment which can read those pulses. Magnetic media requires a specific deck for almost every format to play it back.

# Audio Tape formats

## Open reel ¼" audio tape

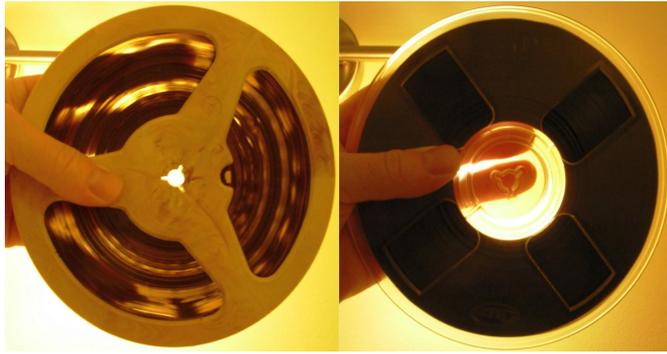


Similarly, audio only tape also started out on open reels, like this ¼" open reel audio tape and playback deck.



## Audio tape bases

\*Paper    \*Acetate    \*Polyester



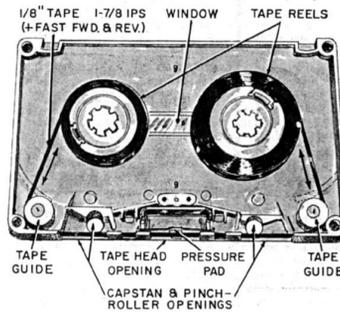
**Acetate**

**Polyester**

There are three different bases for audio tape. Paper (which it's unlikely you will come across) and acetate and polyester. It's important to know how to identify acetate vs. polyester because tapes with an acetate base are more prone to deterioration than polyester and need to be treated for conservation differently. You can use the light test on audio tape to determine whether the base is polyester or acetate. Strangely, the light test is reversed for audio tape. If the light shines through it, it is likely to be acetate. If the light does not shine through, it is likely to be polyester.

# Audio tape formats

## Compact Cassette (1960s – 2000s)



Starting in the 1960s compact cassette formats became popular. Compact cassettes and micro cassettes are also reel-to-reel, but they're contained within a protective carrier, like the plastic case on the audiotapes we're probably all most familiar with.

# Audio tape Formats



8 track audio tape

8 track tape was another popular cassette format.

# Audiotape formats

- **Digital:**  
**DAT(Digital Audio Tape; 1987 – 2000s)**



Digital Audio Tape, known as “DAT” tape, is a crossover format, as it is digital data captured on a magnetic tape.

## Special Cases: Digital Signal on Tape

**DAT (Digital Audio Tape; 1987 – 2000s)**  
**Hi-8, Digibeta, etc.**



So, it's important to note that not all magnetic media is fully analog. Several formats have a digital signal on metal particle tape that are different from the oxide particles on other magnetic media. Similar to DAT are formats like Hi-8 (which has a digital audio track) and DigiBeta (Digital Betacam) which has a digital video signal recorded to tape.

## D2 Tapes



Another hybrid format: D2 tapes are large cassettes that store uncompressed digital media on a metal particle tape. There are other “D” formats, but these are not common.

## Magnetic Media: Risk Factors

- Binder hydrolysis (AKA “sticky shed”)



<https://www.adventdigitizing.com/blog/bake-me-a-tape-2>

One of the main risk factors with magnetic media is sticky shed or binder hydrolysis - this causes the binder (which holds the recording components together) to shed off the plastic backing. If a tape with sticky-shed syndrome is played, the reels will make screeching or squeaking sounds, the image will begin to break apart if its a video and the tape will leave particles on the guides and heads of the deck.

## Magnetic Media: Risk Factors

- Physical breaking of tape and cassette.



Tapes and cassette casing can both physically break.

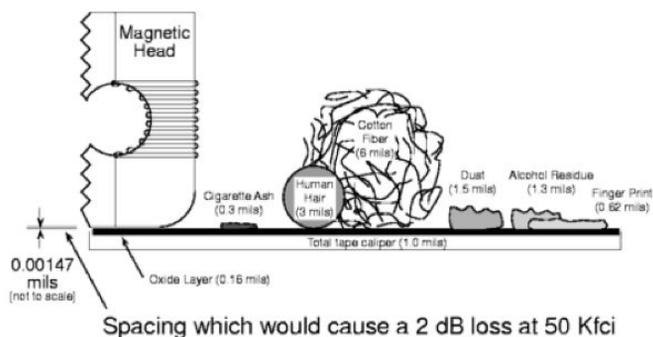
On the left is a photograph of a broken case, which leaves the reel inside it exposed to damage and debris.

On the right you can look through the window of the cassette and see that the tape itself has broken apart inside it.

# Magnetic Media: Risk Factors

- Dust & debris

Debris Perspective on High Density Digital Recording Tape



Dust and debris present huge challenges to preserving magnetic tape, because even tiny particles can come between the tape and the head of the playback machine, resulting in a loss of image.

## Magnetic Media: Risk Factors

- Temperature and humidity



Magnetic tapes that have been exposed to extreme and fluctuating temperatures and humidity levels are at increased risk of all kinds of problems. Proper storage is incredibly important for your audiovisual collection and we will share resources and make recommendations for your collection.

## Obsolescence of Playback Equipment



The biggest risk factor with magnetic media is obsolescence of the technology needed to play it back. Unlike film, which you can see with the naked eye, recordings on magnetic media can only be perceived using playback equipment which can read those pulses. No one is making playback machines for most of these formats anymore, I cannot stress enough how dire the situation for magnetic media is. There are very few engineers left who can fix a broken video deck and the only place to get replacement parts is by salvaging them.

**In 2012, the Library of Congress National Recording Preservation Plan reported that “Many endangered analog formats must be digitized within the next 15 or 20 years before further degradation makes preservation efforts all but impossible.”**

Library of Congress, “Library of Congress National Recording Preservation Plan”, (National Recording Preservation Board of the Library of Congress, Council on Library and Information Resources: December 2012),

<http://www.loc.gov/programs/static/national-recording-preservation-plan/publications-and-reports/documents/NRPPLANCLIRpdfpub156.pdf>

# Magnetic Media: Inspection and Assessment



So, let's get started on inspecting our magnetic media so we can save it!

## Inventory / Visual Inspection Workflow for Magnetic Media



- Visually inspect each asset
- Identify format, brand, length of tape
- Document condition notes: signs of dust, dirt, mold, poor wind, or broken cases
- Document annotations: Title, artist, date, location, recording environment.
- Remove/ slide record inhibit tabs
- Return to storage in correct orientation



So, here is what we are looking for when we inspect magnetic media

## Visually assessing Magnetic Media



- Check physical container for damage
- Clean dusty/ dirty cases during inspection

We will look for broken cases and cassettes. We can also take this opportunity to wipe down the cases if they are dusty or dirty.

## During inspection, note any odors.

A vinegar odor can mean acetic acid decay (for acetate based film or acetate-based magnetic media)  
A waxy or "crayon" odor is a sign of plastic decay in magnetic formats, especially u-matic.



**DO NOT ACTIVELY SMELL ANY ASSET. OVER TIME, THIS POSES A HEALTH RISK.**

When you open the case, **WITHOUT SNIFFING AT IT**, note if you smell anything. Decay often smells like wax or crayons. Some people note a "dirty socks" smell. Vinegar syndrome does not occur in most magnetic media, which is made of polyester. Remember, vinegar syndrome only occurs on acetate stock. Open reel magnetic audio tape however, can be made of acetate and can get vinegar syndrome. Please do not actively smell tapes-- this can pose a health hazard.

## Mold or Crystallization?



Check for patterned black, brown, or mustard colored contamination and for fuzzy or thread-like growths

Mold and chemical crystallization can look similar. If you think you see something, use your loupe to magnify it.

## Poor wind or “tape pack”

Stepped pack, popped strands, poor wind, not rewound.



Just like with film, we want to see a good, flat wind. This is often called a “tape pack” for magnetic media. This shows examples of both what is called “stepped pack” and “popped strands”.

## Remove the Record Inhibit Tab

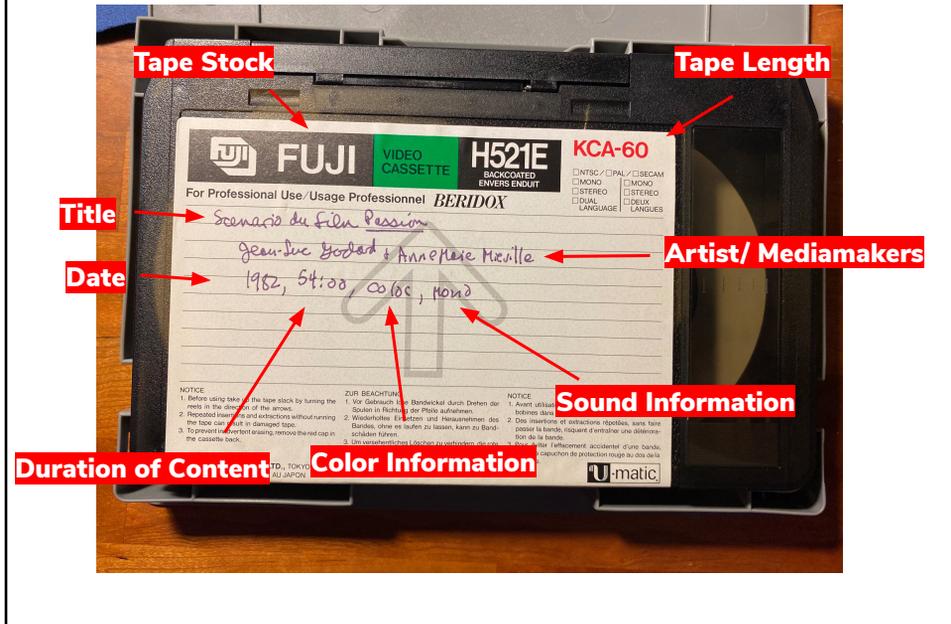


Remove  
to inhibit  
recording



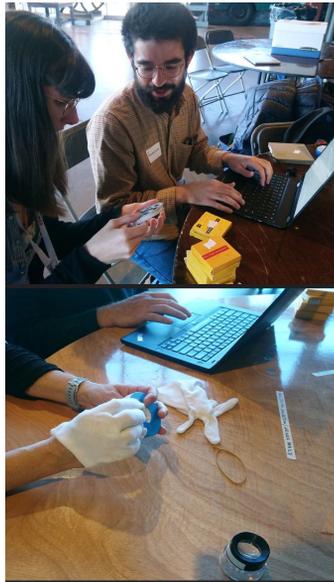
Most cassettes have a tab that inhibits recording over the material on the tape. For U-matic and VHS, the tab should be “popped” or removed. For some formats, the inhibit tab will slide left or right to inhibit recording over the tape.

# Capture information from labels



# Inventory / Visual Inspection Workflow for Film

- Visually inspect each reel. If possible, pull out a few feet of film past the leader to inspect with a lupe.
- Note format, carrier (reel or core), gauge, sound type, base type.
- Document condition: signs of dust, dirt, mold, poor wind, perf tears.
- Document annotations: Title, artist, date, location, recording environment.
- Wrap or splice leader around the outside of the film
- Note if the film needs to be re-wound onto a core.
- If completing a full inspection, hand-wind the film, repair splices and perms, add leader, wind onto a core, and place in a new archival can.



An inspection allows you to do preservation planning and prioritization of archival activities.



## Inventory / Visual Inspection Workflow for Optical Media

- Visually inspect each case and disc. Touch only the edges
- Identify format, brand
- Document condition: signs of dust, dirt, scratching
- Document annotations: Title, artist, date, location, recording environment.
- Return to storage in correct orientation. Replace the case if necessary.



An inspection allows you to do preservation planning and prioritization of archival activities.

# Thank you!



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