GRAMMY FOUNDATION® BASIC METHODOLOGY FOR PRESERVATION, CONVERSION AND ARCHIVING RECORDED MEDIA

This document provides a general overview of the GRAMMY Foundation's requirements and recommendations regarding preservation and archiving methodology for projects funded by the Foundation. A panel of experts convenes each year to review this document. As technology is constantly changing, at the writing of this document the following are best recommended practices.

The task of archiving and preserving recorded sound involves: identification, assessment, preparation, documentation, preservation and access. During this process, many times materials are found to be unstable or compromised in which case the materials must also be stabilized and prepared for conversion by a qualified professional. A common formula for calculating the amount of time to allocate to preserving a collection is four times the play time of the materials. When necessary, content and copyright verification must also be factored into the time estimate to complete the project. Resources for assessment, preservation and access are available at the end of this document.

Analog to digital conversion is a precise process, therefore professionals experienced with preparation of the source media, destination archive format and processes must be used. It is imperative that during the conversion process the best possible copy of the original source material is captured. All archiving and preservation projects are required to either consult with, or retain qualified specialists with a knowledge of current standards of preservation for both planning and execution of the archiving and preservation project. This includes but is not limited to qualified sound archivists, audio engineers and preservation technicians.

Applicants and their technical staff should be familiar with two documents provided by the International Association of Sound and Audiovisual Archives (IASA). Both are available as free downloads at the links below.

- IASA TC-03 is recommended for collection managers and non-technical staff overseeing the project. This document gives an overview of basic methodology for archiving and preservation. http://www.iasa-web.org/content/safeguarding-audio-heritage-ethics-principles-preservation-tc03

- IASA TC-04 should be reviewed by technical staff for detailed technical methodology and standards. Collection managers and non-technical staff will also benefit from the first ten pages. http://www.iasa-web.org/tc04/audio-preservation

The following are a few recommendations and requirements for basic methodology. At the end of this document is a reference list of several archiving and preservation resources.

CONVERSIONS

PARAMETER	IDEAL METHODOLOGY	MINIMUM STANDARD
Sampling frequency and bit rate	Analog to Digital - 192 kHz/24-bit If original source is digital, store at original sampling frequency and bit depth.	Analog to Digital - 96kHz /24-bit If original source is digital, store at original sampling frequency and bit depth.
File format	Open standard: Uncompressed Broadcast Wave (BWAV). Allows easy conversion and bundling of audio/video content and metadata.	Open standard: Uncompressed Wave (WAV)
Recorded track configuration	• Flattened mono files for mono • Flattened multiple mono files for stereo or multi channel	Flattened interleaved stereo files

Archival copies are to be converted flat (unprocessed) without any audio manipulation, dynamics, equalization or before noise reduction takes place to preserve as much of the original sound information as possible. Organizations can provide listening copies that have been "cleaned up," but these should be noted as such and not preserved as archival audio.

Analog tapes should only be played back on tape machines that match the speed and format of the original recording and that are properly cleaned and aligned. Alignment of playback machines should be to original recording levels and tones when possible. Analog discs should only be played back on turntables with corrected speed and balance, and proper styli for the disc type.

Archiving to analog tape will only be considered when source of tape stock and machines are identified and acceptable. Cautionary note: Please also be aware that maintenance of machines and parts is not eligible for funding, but is a concern that should be addressed in your proposal.

- **Do not use DAT** as an archival medium
- **Do not use individual hard drives** as an archival medium
- **All media must be monitored individually (1-to-1). Monitoring more than one tape, CD, etc. at a time during the archiving process is not acceptable.**
- **Processing**, **including noise reduction, is not allowed** to create master digital preservation files.
- Use of **standard computer sound card is not allowed** for analog to digital conversion
- **Lossy compression formats (MP3, AAC, etc.) are not allowed** as an archival format, but may be permitted for website and reference listening copies

ARCHIVING

	IDEAL STANDARD	MINIMUM STANDARD
Digital media and Redundancy requirements	Redundant Array of Independent Disks (RAID)* OR Automated Media Library (AML)* AND One physical back up on one of the following media – Archival grade DVD-R or CD-R, an open source tape standard such as Linear Tape Open (LTO) *(1 selection from each is required)* Plus well-maintained playback equipment and/or applications either properly stored or available for lease.	Two physical back ups geographically separated on the following media: • Archival grade DVD-R or CD-R • An open source tape standard such as Linear Tape Open (LTO) Plus well-maintained playback equipment and/or applications either properly stored or available for lease. Contents to be validated and migrated every 2-5 years. *DVD/CD with open source standard using Universal Disk Format (UDF)*

*If these resources are not currently available to you, you should consider partnering with a trusted digital repositories (see page 4 in bold).

METADATA

Please refer to the IASA TC-03 (http://www.iasa-web.org/sites/default/files/TC03_English.pdf) Section 15 for an overview of this important subject.

LONG-TERM STORAGE, MAINTENANCE AND ACCESSIBILITY

Original source materials and playback equipment should always be retained and stored. All recorded media—tapes and discs, analog and digital—need a cool, dry, dark, stable climate (60 to 70 degrees F., 40-50% relative humidity). Cooler is generally better, but extremely dry conditions are bad for tapes. Keep media away from wiring, power generators, and other electro-magnetic fields. (Most speakers, for example, contain magnets.) Tapes and discs should be stored "on end," not stacked, in proper sleeves or boxes. Do not pack shelves too tightly. Whether you copy to analog or digital media, remember that you must also "archive" equipment (hardware and software) that will play them back.

When archival copies are made, store a complete second set at a secure, climate-controlled, off-site location. Back up your computer files (documentation and editing software) and store the backups off-site. Collections with long-term storage not provided gratis by a dissemination partner, should consider costs of long-term storage in their overall preservation plan.

Digital preservation requires management. Once a collection has been preserved it must also be checked regularly (2-5 years), including the use of check sums as well as timely migration of the data.

The preservation plan should also include access or listening copies in order to reduce use of originals and archival copies. Websites are not archives.

Individual external or internal hard drives, while a valuable working medium, are not to be used as an archival medium or for storage.

Long-term preservation includes a digital mass-storage solution such as a RAID or AML system located in secure host facility. Individuals and small- to medium-sized archives that do not have the capacity for such storage are strongly encouraged to partner with an institution with trusted digital repositories for long-term storage facilities. Possibilities include universities, state libraries, museums or other institutions that would have an interest in storing and providing access to the archived collection such as the Library of Congress or Smithsonian Institution.

RESOURCES

These resources are provided as a courtesy to our grant applicants looking for guidance for their archiving and preservation projects. Resources listed are not partners, sponsors, employees or agents of the GRAMMY Foundation. The GRAMMY Foundation will not be involved with these services or compensation. Applicants are not required to use a resource from this list. It is, however, crucial to the funding of any project that a qualified archivist be identified.

Assessment:

Columbia University Libraries - This survey tool evaluates preservation needs for a wide range of audio and moving image formats. Designed for non-specialist users it provides a mechanism for setting preservation priorities based on the quantities and types of audio and moving image materials, their physical condition and housings, information about existing levels of intellectual control and intellectual property rights, and the potential research value of each collection. Click on Survey Tools at
http://www.columbia.edu/cu/lweb/services/preservation/index.html

Field Audio Collection Evaluation Tool (FACET) - A point-based, open-source software tool that ranks audio field collections based on preservation condition, including the level of deterioration they exhibit and the degree of risk they carry. It assesses the characteristics, preservation problems, and modes of deterioration associated with the following formats: open reel tape (polyester, acetate, paper and PVC bases), analog audio cassettes, DAT (Digital Audio Tape), lacquer discs, aluminum discs, and wire recordings. http://www.dlib.indiana.edu/projects/sounddirections/facet/index.shtml

Technical:

Association of Recorded Sound Collections (ARSC) - http://www.arsc-audio.org/
International Association of Sound and Audiovisual Archives (IASA) - http://www.iasa-web.org/
Library of Congress (LOC) - http://www.digitalpreservation.gov/ and
http://www.loc.gov/rr/record/nrpb/pub137.pdf
National Academy of Recording Arts & Sciences / *Audio Engineer Society* (AES) -
www.grammy.com/PDFs/Recording_Academy/Producers_And_Engineers/DeliveryRecs.pdf
Society of American Archivists (SAA) - http://www.archivists.org/
Sound Directions - http://www.dlib.indiana.edu/projects/sounddirections/index.shtml
The Science and Technology Council of the Academy of Motion Picture Arts and Sciences (AMPAS) -
http://www.oscars.org/science-technology/council/projects/digitaldilemma/index.html

Metadata standards:

METS - http://www.loc.gov/standards/mets/
OLAC - http://www.olacinc.org/drupal/

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